

DSC3216: PREDICTIVE ANALYTICS IN BUSINESS

NUS Business School
Department of Analytics & Operations (DAO)

Location: TBD
Time: TBD

ADMINISTRATIVE INFORMATION

Instructor:	Dr. He Long	Office:	BIZ1 8-73
Office Hours:	By email appointment	Email:	longhe@nus.edu.sg

Prerequisite: DSC2008 Business Analytics

Evaluation: Assignment 20%, quiz 30 %, project 40%, class participation 10%

References:

“Data Science for Business: What you need to know about data mining and data-analytic thinking” (2013), Provost, F., and T. Fawcett. O'Reilly

[The listed textbook covers majority of the concepts in the class. But it is not required to buy it, because Google is free. We will also use some supplement examples, including codes, from other sources.]

COURSE OUTLINE

The objective of this course is to develop an understanding of data science with emphasis on forecasting as a powerful tool for analyzing complex issues and solving business problems. We will make productive use of analytics tools available in R. While the class focuses on simplified models, it aims to bridge the classroom knowledge and business applications, such as e-commerce and sharing economy. Some relevant mathematical optimization techniques for decision making will be mentioned.

This is a tentative course schedule and subject to changes.

Week	Topic	Remark
1	Intro and Review of Stats & Optimization	
2	Business Problems and Data Science Solutions	Assignment 1 upload
3	Classification and R Basics	
4	Linear Classifier	Assignment 2 upload
5	Model Complexity and Overfitting	
6	Similarity, Neighbors and Clusters	Quiz 1
Recess	Holiday	Proposal
7	Model Evaluation	
8	Evidence and Probabilities	Assignment 3 upload
9	Holiday	
10	Time Series Methods & ARIMA	
11	Choice Models and Applications	Assignment 4 upload
12	Spatial Data Analysis and Applications	Quiz 2
13	Project Presentation	Report

ASSIGNMENT (20%)

Assignment will generally be due on before the next class after it is posted, i.e., 12nn Fridays. Everyone should turn in **individual soft copies** via IVLE. **LATE ASSIGNMENT WILL NOT BE ACCEPTED.**

QUIZ (30%)

There will be 2 quizzes. The quiz will be cumulative and comprehensive. They will be closed book, but you may bring one formula sheet. The quiz duration will be 45 minutes.

Quiz 1 (15%) Date: TBD, in class

Quiz 2 (15%) Date: TBD, in class

TEAM PROJECT (40%)

The project for this class is to do a careful data analysis of real application. Choose a problem to address that is of particular interest to you. Your project should include a clearly defined business problem, data preparation, analytic model, and solution supported by performance evaluation.

The project is a group project, to be done in groups of four to six, depend on class enrollment. Each group member will anonymously evaluate the participation of the other members of the group, and this will be considered in grading.

All parts of the project will be primarily evaluated in the following aspects:

- a. Innovation: is the problem interesting and new?
- b. Relevance: are the problem and method practical?
- c. Rigor: is the method used appropriate?

Team Project Part I – Proposal (10%): TBD

Write a proposal for your project. Explain the business problem, managerial decisions you are making, and data source and one or two lines of sample data. (No more than one page.)

Team Project Part II – Presentation (10%): TBD

Each group will have 15-min presentation with 2-min Q&A. The sequence of presentations will be randomly assigned.

Team Project Part III – Final report (20%): TBD

QUESTIONS

For questions regarding to course materials, please post on IVLE Forum. Posting and answering on IVLE Forum will be counted towards class participation.

For issues in course administration, please email with subject “DSC3216+Name”.