Course Outline

Course Code : DBA4811
Course Title : Analytical Tools for Consulting
Class Date : From 19/1/2024 To 10/5/2024
Semester : Semester 2, Academic Year AY2023/2024
Faculty : Tam Trinh
Department : Analytics & Operations
Email : tamtrinh@nus.edu.sg
URL : https://bizfaculty.nus.edu.sg/faculty-details/?profId=727
Telephone : Click here to enter text

Overview

Decisions supported by timely data analyses are the norm in this "Big Data" era. Many industries including (but not limited to) finance, supply chain management, marketing, human resources, and sports, rely on analytics-savvy analysts or consultants to improve efficiency, profitability, customer satisfaction, and performance.

The teaching method will be a combination of lectures, problem-based learning, class discussions, and guest lectures on assigned topics, and case analysis. Individual participation by students is strongly encouraged.

Course Objectives

This course takes a practitioner's perspective to introduce and integrate knowledge in this area with applications in the various business sectors. It prepares students for the work environment and the diverse challenges faced by business analysts and consultants. The goal is to equip students with the skills to help their clients make distinctive, lasting, and substantial improvements in performance using modern analytics.

Assessment

Assessment Components	Weightage
Class Attendance & Participation	30%
Individual Assignment	30%
Group Project	40%

Tentative Schedule and Outline

Lesson/ Week	Date	Session (lesson summary or outline / learning objectives / preparation / cases & assignments / follow-up readings & resources)
1	19 Jan 2024	• Course overview / Discussion of trends and roles of analytics • Persuading with data – data visualization • *Guest Speaker Group Assignment*
2	26 Jan 2024	• Winning with data / User problem & solution • Case study: Analytics in Fashion Retailing (Flashion) • Discussion and exercises with Linear regression • *Individual Assignment 1*
3	2 Feb 2024	• Modeling & Metrics / Choice Modeling • Discussion and exercises with Logistic regression • Case study: Analytics in Medicine (Framingham heart study)
4	9 Feb 2024	• Case study: Process Analytics (National Cranberry)
5	16 Feb 2024	• Case study: Analytics in Banking (UOB) • *Individual Assignment 2*
6	23 Feb 2024	• Model selection & considerations • Discussion and exercises with subset-based, regularization methods • *Final Group Assignment*
	1 Mar 2024	No class – Reading week
7	8 Mar 2024	• Non-linear models: KNN, Decision trees, Naïve Bayes, SVM, Neural network • Applications
8	15 Mar 2024	• Ensemble methods: Forest, Boosting, Bagging / Models & Limitations • *Individual Assignment 3*
9	22 Mar 2024	• Case study: Competing (and winning) against an industry giant with Analytics (Netflix)
10	29 Mar 2024	No class – Public holiday
11	5 Apr 2024	• Case study: Using Analytics to power last-mile delivery (GHN / AhaMove)
12	12 Apr 2024	• Case study: Demystifying analytical methods (Target, Kohl's) • Module wrap
13	19 Apr 2024	• *Final Group Presentations*

There will be Guest industry practitioners from Week 3 onwards. Details will be shared in class.

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

1. Bertsimas, D., O'Hair, A., and Pulleyblank W.R., 2016. *The analytics edge*. Charlestown, MA: Dynamic Ideas LLC.

2. Pochiraju, B. and Seshadri, S., 2019. *Essentials of business analytics.* Springer, Switzerland. https://link-springer-com.libproxy1.nus.edu.sg/content/pdf/10.1007/978-3-319-68837-4.pdf

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://nus.edu.sg/osa/resources/code-of-student-conduct