

## Course Outline

**Course Code** : DBA4814  
**Course Title** : Analytics in Digital Marketplaces  
**Class Date** : From 1/12/2026 To 17/4/2026  
**Semester** : 2nd, Academic Year 2025/2026  
**Faculty** : Bar Light  
**Department** : Analytics & Operations  
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### **Overview**

In the digital age, the surge in data collection by online platforms, coupled with their unparalleled ability to tailor marketplace mechanisms, has revolutionized how markets operate. This course explores the applications of data science in digital marketplaces, focusing on how prominent platforms like Google Ads, Amazon, and Grab leverage data-driven strategies, including A/B testing, adaptive experimentation, machine learning tools, and mechanism design, to improve key business metrics across matching, pricing, digital ad allocation, and recommendation systems. Students will learn to apply data-driven tools to marketplace design, bridging theory and practice in important business problems.

We will host guest speakers from leading online marketplaces who will share insights into key challenges faced in their platforms and the solutions they implemented to address them.

### **Course Objectives**

Key learning outcomes are:

1. Students will gain proficiency in various aspects of marketplace design and in utilizing data-driven tools to analyze and optimize digital marketplace operations.
2. Learners will develop the ability to apply theoretical marketplace concepts to practical problems.

### **Assessment**

Assessment Components	Weightage
(i) Two Assignments	30%
(ii) Group project	30%
(iii) Final in-class quiz	30%
(iv) Class Participation	10%
<b>Total for CA:</b>	100%
<b>Total for Final Examination:</b>	%

### **Schedule and Outline**

Schedule is NOT final and subject to change according to guest speakers' availability and other factors.

The schedule for guest speakers is typically adjusted to take place on a Saturday (date pending).

Lesson/ Week	Date	Session (lesson summary or outline / learning objectives / preparation / cases & assignments / follow-up readings & resources)
1	15 Jan 2025	Online Marketplaces: Introduction
2	22 Jan 2025	Various Problems in Online Marketplaces: Matching, Quality Selection, Assortment, Pricing
3	29 Jan 2025	Experimentation: Basics of A/B Testing in Online Marketplaces
4	5 Feb 2025	Experimentation: SUTVA Violations, Cluster Randomization, and Switchback Experiments in Online Marketplaces
5	12 Feb 2025	Adaptive Experimentation in Online Marketplaces: Multi Armed Bandits and Applications
6	19 Feb 2025	No Class: Chinese New Year. Make-Up Session with Guest Speakers.
7	26 Feb 2025	No Class: Recess
8	5 Mar 2025	Introduction to Mechanism Design
9	12 Mar 2025	Digital advertising: Introduction and Auction Design
10	19 Mar 2025	Digital advertising: Autobidding Strategies + Guest Speaker (pending)
11	26 Mar 2025	Introduction to Blockchain and Onchain Marketplaces
12	2 April 2025	No Class: NUS Well-Being Day
13	7 Apr 2025	Class Presentation
14	14 Apr 2025	Classroom Test

### **General Guide & Reading**

Readings will be disturbed during the semester.

### **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>