Course Outline

Course Code : DAO1704X
Course Title : Decision Analytics using Spreadsheets
Class Date : From 11/8/2025 To 14/11/2025
Semester : Semester 1, Academic Year AY2025/26
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Overview

We are now at the era of big data. Companies are able to collect a tremendous amount of data, very often more than necessary, with ease. "Information is Power" is no longer valid if companies are not able to make correct decisions timely in terms of the data available. The use of business analytics for modelling and decisions represents the future of best practices for the success of tomorrow's companies.

This course prepares students with theory and skills to capture business insights from data for decision making using Spreadsheets. Practical examples and cases with rich data are used to stimulate students' interest and foster their understanding of the use of Business Analytics in management or business fields.

Course Objectives

Students are expected to become proficient in the extensive use of Spreadsheets in the business environment. This course will enable students to consider the data dimension in making decisions at all levels in the organizational settings.

Assessment

Assessment Components	Weightage
1. Final Project and Presentation (Group & individual)	15%
2. Class Participation (Individual)	15%
3. Quizzes (Individual)	15%
4. Assignments (Individual)	15%
5. Final Exam (Individual)	40%

Schedule and Outline

Lesson/ Week	**Session** (lesson summary or outline / learning objectives / preparation / cases & assignments / follow-up readings & resources)
1	Introduction to the course • Course administrative matters
2	Data Intelligence • Introduction to basic summary analytics using Excel

	• Introduction to basic data visualization using Excel • Pivot Table analysis
3	Basic Probability Concepts • Calculation of conditional probability • Bayes' theorem • independence concept
4	Discrete Probability Distributions • Differentiate between Binomial and Poisson distributions • Solve questions involving discrete probability distributions • Apply Excel's probability functions to compute the required probabilities
5	Continuous Probability Distributions • Differentiate between discrete and continuous probability distributions • Solve questions involving continuous probability distributions • Apply Excel's probability functions to compute the required probabilities
6	Introduction to Simulation Modelling • Use Excel to simulate a variety of random variables • Carry out Simulation to analyse business decision problems
7	Decision making via Decision Trees • Illustrate a decision tree and its power in decision making • Use decision tree to make business decisions under uncertainty
8	Introduction to Linear Optimization • Formulate a Linear Programming (LP) mathematical model • Solve the optimal solution of an LP using Excel solver • Geometry of linear optimization
9	Sensitivity Analysis and Shadow Prices in Linear Optimization • Explain what are shadow prices • Understand allowable increase and decrease • Interpret a sensitivity report
10	Public holiday
11	Introduction to Discrete Optimization • Construct binary constraints • Logical constraint formulation • big-M notation
12	E-Presentation I: final group project
13	E-Presentation II: final group project

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

Main Textbook:

Data-Driven Decision Making: EXCEL in Business analytics.

Tan Hong Ming, Tung Yi-Liang and Liu Qizhang

ISBN: 978-981-3351-80-6

Supplementary materials

AE Business Analytics: Data Analysis & Decision Making, 7th Edition
S. Christian Albright, Wayne L. Winston
ISBN-13: 9789814878180 | ISBN-10: 9814878189

Lecture notes, case studies and teaching videos

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