

## **DAO1704 Decision Analytics Using Spreadsheet**

**Lecturers:** Dr. Tan Hong Ming (Course coordinator), Tung Yi-Liang, Chen Kim Heng, Quek Ser Aik, Lu Bingnan

**Session** : Semester 1, 2022/2023

### **Description**

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 “Information is Power” is no longer valid if companies are not able to make correct decisions timely in terms of the data available.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 modeling and decisions represents the future of best practices for the success of tomorrow’s companies.

This module 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.

### **Objectives**

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

### **Course Outline**

#### **1) Understanding Data**

- a) Data management and visualization with Pivot Table
- b) Laws of Probability, Bayes Theorem, Covariance
- c) Probability Distributions

#### **2) Managerial Decision Analysis**

- a) Decision Tree Model and Analysis
- b) General Method Decision Analysis

#### **3) Simulation Modeling: Concepts and Practice**

- a) Random Number Generators
- b) Using the Sample Data for Analysis
- c) Excel Spreadsheets for Simulation Modeling

#### **4) Optimization Models and Their Applications**

- a) Formulating Management Problems
  - i) Linear Optimization Model
  - ii) Sensitivity Analysis
  - iii) Discrete Optimization Model
- b) Excel solvers for Optimization Modeling

## **Reading List**

Compulsory reading:

Business Analytics: Data, Modelling & Application, 1st edition 2020, Cengage Publishing

Supplementary reading:

“The Analytics Edge” by Allison K. O'Hair, Dimitris Bertsimas, and William R. Pulleyblank

Course Package

## **Prerequisites**

Fundamental skills in Excel.

## **Weightage of Assessment**

Continuous Assessment:

Class Discussion	10%
Group Project	15%
Quiz	10%
Assignments	15%

Final Examination                      50%