City University of Hong Kong
Course Syllabus

offered by Department of Management Sciences
with effect from Semester A 2023/24

Part I Course Overview

Course Title:	Business Analytics and Decision Modelling
Course Code:	FB5731
Course Duration:	One Semester
Credit Units:	2
Level:	P5
Medium of Instruction:	English
Medium of Assessment:	English
Prerequisites: *(Course Code and Title)*	Nil
Precursors: *(Course Code and Title)*	Nil
Equivalent Courses: *(Course Code and Title)*	Nil
Exclusive Courses: *(Course Code and Title)*	MS5731 Quantitative Methods (From the old curriculum)

Part II Course Details

1. Abstract

This course aims to:

- Provide students with the key concepts, knowledge, and tools to use data, analytical models and information technology to support practical managerial decision-making
- Develop students' basic skills and hands-on experiences to uncover useful information and solve real business problems by analyzing the complex data sets, and to derive the best possible decisions to gain a company competitive advantages and enhanced capabilities in better dealing one's daily business decisions
- Expose students to the best practices and successful stories of how management science or quantitative methods has generated significant business values and competitive advantages for organizations

2. Course Intended Learning Outcomes (CILOs)

(CILOs state what the student is expected to be able to do at the end of the course according to a given standard of performance.)

No.	CILOs	Weighting (if applicable)	Discovery-enriched curriculum related learning outcomes (please tick where appropriate)		
			A1	*A2*	*A3*
1.	Demonstrate basic knowledge in the concepts, principles and benefits of some most widely used management science techniques and their applications	30%			✓
2.	Employ some basic management science tools of data analysis, modelling and information technologies to solve and to analyze some real managerial decision-making problems	30%		✓	✓
3.	Examine and evaluate the managerial applications of some basic quantitative methods	20%		✓	✓
4.	Interpret and communicate the analytical results and solutions to non-quantitative managers and practitioners	20%	✓	✓	
		100%			

A1: Attitude
Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

A2: Ability
Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to self-life problems.

A3: *Accomplishments*
Demonstrate accomplishment of discovery/innovation/creativity through producing /constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

3. Teaching and Learning Activities (TLAs)

(TLAs designed to facilitate students' achievement of the CILOs.)

TLA	Brief Description	CILO No.						Hours/week (if applicable)
		1	2	3	4			
Lecture	Concepts and general knowledge of logistics and supply chain operations and the applications of management science techniques in logistics and supply chain decision analysis	✓	✓	✓	✓			
Lab sessions	Hands-on exercises in using some computer software, such as Microsoft Excel, to solve managerial decision-making problems by applying learnt quantitative techniques	✓	✓	✓	✓			
Group case studies	Real case analysis and discussion	✓	✓	✓	✓			
Reading assignments	Supplemental reading materials on successful stories and industrial practices	✓	✓	✓	✓			

4. Assessment Tasks/Activities (ATs)

(ATs are designed to assess how well the students achieve the CILOs.)

Assessment Tasks/Activities	CILO No.						Weighting	Remarks
	1	2	3	4				
Continuous Assessment: 60%								
1. Course Assignments	✓	✓	✓	✓			50 %	
2. Class Participation	✓	✓	✓	✓			10%	
Examination: 40% (take home and /or duration: 3 hours, if applicable)								
1. Written Examination	✓	✓	✓	✓			40%	
							100%	

5. Assessment Rubrics

(Grading of student achievements is based on student performance in assessment tasks/activities with the following rubrics.)

Applicable to students admitted in Semester A 2022/23 and thereafter

Assessment Task	Criterion	Excellent (A+, A, A-)	Good (B+, B)	Marginal (B-, C+, C)	Failure (F)
1. Course Assignments	Understanding the concepts and methods of some most widely used management science techniques and their applications	High	Significant	Moderate	Not even reaching marginal levels
2. Class Participation	Contribution through readings, in-class exercises, and active and insightful class participation. Punctual and nearly full attendance	High	Significant	Moderate	Not even reaching marginal levels
3. Written Examination	Capability to solve the problems, and with clear key points covered for open-end questions	High	Significant	Moderate	Not even reaching marginal levels

Applicable to students admitted before Semester A 2022/23

Assessment Task	Criterion	Excellent (A+, A, A-)	Good (B+, B, B-)	Fair (C+, C, C-)	Marginal (D)	Failure (F)
1. Course Assignments	Understanding the concepts and methods of some most widely used management science techniques and their applications	High	Significant	Moderate	Basic	Not even reaching marginal levels
2. Class Participation	Contribution through readings, in-class exercises, and active and insightful class participation. Punctual and nearly full attendance	High	Significant	Moderate	Basic	Not even reaching marginal levels
3. Written Examination	Capability to solve the problems, and with clear key points covered for open-end questions	High	Significant	Moderate	Basic	Not even reaching marginal levels

Part III Other Information (more details can be provided separately in the teaching plan)

1. Keyword Syllabus

(An indication of the key topics of the course.)

Introduction to Modelling and Management Science
Modelling for Managerial Decisions. Quantitative vs. qualitative Problem Solving Process. Use and Implementation of Modelling

Basic Concepts in Probability and Statistics
Expected Values. Standard Deviation. Normal Distribution. Concepts of Sampling. Estimation and Confidence Intervals. Data analysis using Excel

Regression Analysis
Simple Linear Regression models. Estimation and prediction suing regression method. Interpretation of regression parameters and coefficient of correlation.

Introduction to Data Mining
Predictive models. Cluster analysis. Market basket analysis.

Constrained Optimization techniques
Optimization modelling. Linear Programming formulation. Using Excel Solver to solve constrained optimization problem. Other constraint optimization models (including Integer and Non-linear programming problems) and their applications.

Multiple Objective Decision Making Techniques
Multiple objective decision problems and decision making tools. The Analytical Hierarchy Process.

Simulation Modelling and Analysis
Simulation concepts and modelling. Excel simulation and managerial applications

Implementation Issues
Success, challenges and issues in quantitative managerial decision support. Uses and abuses of quantitative results in real-Life situations. Strengths and limitations of quantitative models.

2. Reading List

2.1 Compulsory Readings

(Compulsory readings can include books, book chapters, or journal/magazine articles. There are also collections of e-books, e-journals available from the CityU Library.)

1.	Nil

2.2 Additional Readings

(Additional references for students to learn to expand their knowledge about the subject.)

1.	S. Christian Albright, Wayne Winston, Christopher Zappe, Data Analysis and Decision Making with Microsoft® Excel, Revised, 3rd Edition, ISBN-10: 0324662440, ISBN-13: 9780324662443, © 2009
2.	Cliff Ragsdale, Spreadsheet Modeling & Decision Analysis: A Practical Introduction to Management Science, Revised, 5th Edition, Virginia Polytechnic Institute and State University ISBN-10: 0324656637 ISBN-13: 9780324656633 © 2008
3.	Taylor, B W, Introductory Management Science, 8/e (2004, Prentice Hall)
4.	Levine, D M, Stephan, D, Krehbiel, T C and Berenson, M L: Statistics for Managers, 4/e (2005, Prentice Hall)
5.	Wisniewski, M: Quantitative Methods for Decision Makers, 3/e (2002, Prentice Hall)
6.	www.informs.org