Form 2B

City University of Hong Kong

Information on a Course
offered by Department of Management Sciences
with effect from Semester A in 2009 / 2010

Part I

Course Title: Managerial Decision Modeling

Course Code: MS5313

Course Duration: One Semester

No. of Credit Units: 3

Level: P5

Medium of Instruction: English

Prerequisites: Nil

Precursors: Nil

Equivalent Courses: Nil

Exclusive Courses: Nil

Part II

Course Aims
Serving as a foundation course for developing advanced analytical and planning skills, this course aims to sharpen students' ability to creatively design, formulate, and construct quantitative models for managerial decision problems. Specifically, this course is intended 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 to analyse various business decision problems
- Expose students to the practical cases of how quantitative modelling and analysis skills have generated significant business values and competitive advantages.

Course Intended Learning Outcomes (CILOs)

Upon successful completion of this course, students should be able to:

No.	CILOs	Weighting
1.	Demonstrate the attitude and/or ability to discuss the basic knowledge in concepts, principles and benefits of quantitative methods and analytical models.	30%
2.	Apply quantitative methods to **design**, **formulate**, and **create** analytical models for managerial decision problems in a precise and creative manner. (**Ability**)	40%
3.	Evaluate the analytical results and recommend best possible solutions for managerial decision making.	30%

Teaching and Learning Activities (TLAs)

(Indicative of likely activities and tasks designed to facilitate students' achievement of the CILOs. Final details will be provided to students in their first week of attendance in this course)

CILO No.	TLAs	Hours/week
1, 2, 3	**1. Interactive Lectures** Class sessions will be devoted to probing, extending and applying the general knowledge related to the concepts, principles and benefits of quantitative methods and analytical models: ▪ The "Tell-Show-Do" sequence will be adopted to provide students with hands-on experience on how to develop and apply the relevant techniques. ▪ While those skills necessary to manipulate the quantitative techniques are developed, examples and case studies will be used to emphasize the crucial skills of describing and defining the problem before the conduct of any analysis is performed. ▪ Students will be asked to discuss and respond to the questions arising from the examples or the case study problems.	3 hours /week
1, 2	**2. Computer Lab Activities** Whenever available, computer software packages will be introduced as a tool for solving managerial decision models with relevant quantitative techniques, so that students can actually bring what they learnt to their place of work.	

Constructive Alignment of CILOs and TLAs

	TLA 1	TLA 2
CILO 1	✓	✓
CILO 2	✓	✓
CILO 3	✓	

Assessment Tasks

(Indicative of likely activities and tasks designed to assess how well the students achieve the CILOs. Final details will be provided to students in their first week of attendance in this course)

CILO No.	Types of Assessment Tasks (ATs)	Assessment Details	Weighting (if applicable)
1, 2, 3	**1. Course Assignment**	Various learning problems will be assigned as homework. Through working on these problems, students will be familiarized with the skills required to precisely and creatively design, formulate, solve, and evaluate business decision models.	40%
1, 2, 3	**2. Class Participation**	Students will be asked to offer insights and respond to questions arising from the lectures. There will also be active learning exercises in class. These exercises are designed to encourage learning participation in classroom activities.	10%
1, 2, 3	**3. Written Examination**	The exam is designed to assess students' ability to discuss and apply quantitative methods to formulate analytical models for business decision problems and evaluate the best solutions for the problems.	50%

Constructive Alignment of CILOs and Assessment Tasks

	AT 1	AT 2	AT 3
CILO 1	✓	✓	✓
CILO 2	✓	✓	✓
CILO 3	✓	✓	✓

Grading of Student Achievement:

Refer to Grading of Courses in the Academic Regulations for Taught Postgraduate Degrees.

Course Assignment

Letter Grade	Grade Point	Grade Definitions	
A+ A A-	4.3 4.0 3.7	Excellent:	Strong evidence of understanding the key concepts and definitions of the learned subject; capacity to analyse and synthesize; superior grasp of subject matter; evidence of extensive knowledge base.

B+ B B-	3.3 3.0 2.7	Good:	Evidence of grasp of subject, some evidence of critical capacity and analytic ability; reasonable understanding of issues; evidence of familiarity with literature.
C+ C C-	2.3 2.0 1.7	Adequate:	Student who is profiting from the university experience; understanding of the subject; ability to show some evidence of familiarity with literature.
D	1.0	Marginal:	Sufficient familiarity with the subject matter to enable the student to progress further.
F	0.0	Failure:	Little evidence of familiarity with the subject matter; limited or irrelevant use of literature.

Class Participation

Letter Grade	Grade Point	Grade Definitions	
A+ A A-	4.3 4.0 3.7	Excellent:	Strong evidence of original thinking; good organization, capacity to analyse and synthesize; superior grasp of subject matter; evidence of extensive knowledge base.
B+ B B-	3.3 3.0 2.7	Good:	Evidence of grasp of subject, some evidence of critical capacity and analytic ability; reasonable understanding of issues; evidence of familiarity with literature.
C+ C C-	2.3 2.0 1.7	Adequate:	Some evidence of grasp of subject, little evidence of critical capacity and analytic ability; reasonable understanding of issues.
D	1.0	Marginal:	Sufficient familiarity with the subject matter to enable the student to progress without repeating the case report.
F	0.0	Failure:	Little evidence of familiarity with the subject matter; weakness in critical and analytic skills; limited or irrelevant use of literature.

Written Examination

Letter Grade	Grade Point	Grade Definitions	
A+ A A-	4.3 4.0 3.7	Excellent:	Strong evidence of ability to analyse, synthesize; superior grasp of subject matter; evidence of extensive knowledge base.
B+ B B-	3.3 3.0 2.7	Good:	Evidence of grasp of subject, some evidence of critical capacity and analytic ability; reasonable understanding of issues; evidence of familiarity with literature.
C+ C C-	2.3 2.0 1.7	Adequate:	Student who is profiting from the university experience; understanding of the subject; ability to develop solutions to simple problems in the material.
D	1.0	Marginal:	Sufficient familiarity with the subject matter to enable the student to progress without repeating the course.
F	0.0	Failure:	Little evidence of familiarity with the subject matter; weakness in critical and analytic skills; limited or irrelevant use of literature.

Part III

Keyword Syllabus

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

Time Series Analysis

Time series forecasting techniques and their applications. Moving averages. Exponential Smoothing. Seasonality. Trend models.

Regression Analysis

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

Discriminant and Classification Analysis

The two-group discriminant problem. The k-group discriminant problem. Excel implementation and business applications.

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.

Recommended Reading Text(s)

George E. Monahan, **Management Decision Making: Spreadsheet Modeling, Analysis, and Applications** (2000), Cambridge University Press, Cambridge, England ISBN: 0 521 78118 3

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

Cliff Ragsdale, **Spreadsheet Modeling & Decision Analysis: A Practical Introduction to Management Science, Revised, 5th Edition,** Virginia Polytechnic Institute**,** ISBN-10: 0324656637, ISBN-13: 9780324656633 © 2008

Taylor, B W, **Introductory Management Science**, 8/e (2004, Prentice Hall)

Levine, D M, Stephan, D, Krehbiel, T C and Berenson, M L: **Statistics or Managers**, 4/e (2005, Prentice Hall)

Wisniewski, M: **Quantitative Methods for Decision Makers** (2002, Prentice Hall)

Online Resources

www.informs.org