

**City University of Hong Kong  
Course Syllabus**

**offered by Department of Management Sciences  
with effect from Semester A 2022/23**

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**Part I Course Overview**

**Course Title:** Solving Business Problems with Spreadsheet Modeling

**Course Code:** CB2011

**Course Duration:** One Semester

**Credit Units:** 3

**Level:** B2

**Proposed Area:**  Arts and Humanities  
(for GE courses only)  Study of Societies, Social and Business Organisations  
 Science and Technology

**Medium of Instruction:** English

**Medium of Assessment:** English

**Prerequisites:** Nil  
(Course Code and Title)

**Precursors:** MA2172 Applied Statistics for Sciences and Engineering or equivalent  
(Course Code and Title)

**Equivalent Courses:** Nil  
(Course Code and Title)

**Exclusive Courses:** MS3261 Business Modeling with Spreadsheets  
(Course Code and Title) GE2255 Solving Business Problems with Spreadsheet Modeling  
CB2203 Data-driven Business Modeling

## Part II Course Details

### 1. Abstract

(A 150-word description about the course)

Spreadsheet is a powerful tool for business analysis. This course aims to develop students' ability to formulate, analyse and solve business problems using spreadsheet modeling. Real problems that companies encounter on a day-to-day basis are presented, with the aim of helping students derive applicable principles and link principles to practice. The goal of the course is to train students to become effective modellers who can build sound models to solve business problems in various functional areas of business.

### 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 <sup>#</sup>	Weighting* (if applicable)	Discovery-enriched curriculum related learning outcomes (please tick where appropriate)		
			A1	A2	A3
1.	understand managerial problems, collect relevant data, and analyse the data	20%	✓		
2.	build sound models for the managerial problems using spreadsheets	30%		✓	
3.	select appropriate solution method and implement the analysis for the spreadsheet models	30%		✓	
4.	validate the results obtained from spreadsheet models, and communicate and explain the analysis and findings logically.	20%		✓	✓
		100%			

\* If weighting is assigned to CILOs, they should add up to 100%.

<sup>#</sup> Please specify the alignment of CILOs to the Gateway Education Programme Intended Learning outcomes (PILOs) in Section A of Annex.

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			
Lectures	In the lectures, students learn the concepts of modeling, formulation of managerial problems in various functional areas, and tools in spreadsheet modeling. They will be provided with opportunities for peer interactions in the lectures.	✓	✓	✓				

Computer-based laboratories	Hands-on experience with the techniques and problem solving activities based on real world business problems. The laboratory sessions consolidate and supplement what the students learn in lectures.	✓	✓	✓				
Homework assignment	The assignment is designed to familiarize students with the practice of problem formulation, modeling, analysis, solution design with appropriate tools, and validation of the results.	✓	✓	✓	✓			

#### 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: 40%							
Homework Assignment	✓	✓	✓	✓		10%	
Quizzes	✓	✓	✓			30%	
Examination: 60% (duration: 2 hours, if applicable)							
						100%	

\* The weightings should add up to 100%.

## 5. Assessment Rubrics

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

Assessment Task	Criterion	Excellent (A+, A, A-)	Good (B+, B, B-)	Fair (C+, C, C-)	Marginal (D)	Failure (F)
1. Quizzes	The quizzes are designed to assess students' reading, understanding of a particular problem situation, independent thinking, reasoning, and application of appropriate spreadsheet skills to obtain an accurate solution.	Strong evidence of original thinking; good organization, capacity to analyse and synthesize; superior grasp of subject matter; evidence of extensive knowledge base and familiarity with literature. Clearly and correctly states most critical points and important findings of the project. Excellent presentation skills.	Evidence of original thinking, some evidence of critical capacity and analytic ability; reasonable understanding of issues; evidence of familiarity with literature. Clearly and correctly states some critical points and important findings of the project. Good presentation skills.	Little evidence of original thinking, little evidence of critical capacity and analytic ability; reasonable understanding of issues. Correctly states some critical points and some of the findings of the project. Average presentation skills.	Very little evidence of original thinking, critical capacity, and analytic ability but shows marginal understanding of subject matters and issues and states a few critical points and findings of the project. Below average presentation skills.	Very little evidence of familiarity with the subject matter and issues; weakness in critical and analytic skills. Poor presentation skills.
2. Homework assignment	The homework assignments are designed to help students practise their problem-solving skills and obtain hands-on experience using spreadsheet modeling tools.	Strong evidence of original thinking; good organization, capacity to analyse and synthesize; superior grasp of subject matter; evidence of extensive knowledge base.	Evidence of grasp of subject, some evidence of critical capacity and analytic ability; reasonable understanding of issues; evidence of familiarity with subject matter.	Some evidence of understanding of the subject; ability to perform basic model building and data analysis.	Adequate familiarity with the subject matter; shows marginal ability to perform basic model building and data analysis.	Little evidence of familiarity with the subject matter; weakness in critical and analytic skills; limited or irrelevant use of literature.
3. Written Examination	The examination covers all topics of the course. It is designed to assess	Strong evidence of original thinking; good organization, capacity to analyse	Evidence of grasp of subject, some evidence of critical capacity	Some evidence of understanding of the subject; ability to perform basic	Adequate familiarity with the subject matter to enable the student to progress without	Little evidence of familiarity with the subject matter; weakness in critical

	students' understanding on the concepts of spreadsheet modeling, and their ability to apply them to solve business problems.	and synthesize; superior grasp of subject matter; evidence of extensive knowledge base.	and analytic ability; reasonable understanding of issues; evidence of familiarity with literature.	model building and data analysis.	repeating the course.	and analytic skills; limited or irrelevant use of literature.
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### 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 Spreadsheet Modeling

The Spreadsheet Modeling Process. A systematic approach (discover, diagnose, design and deliver) for exploratory spreadsheet modeling.

##### Relationship Analysis

Structural “what-if” analyses. Analysis using scenario manager and goal seeker. Break-even analysis.

##### Optimization with Excel Solver

Problem formulation. Use of solver. Sensitivity analysis. Applications include investment problem, inventory problem, optimal product mix, workforce scheduling, assignment problem, transportation problem, etc.

##### Business Analysis through Excel Simulation

Monte Carlo simulation. Replication using datatable. Random number generation. Applications include production planning, hotel overbooking, gambling game, queueing, etc.

##### Project Scheduling

Critical path method. PERT.

#### 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.	B. Render, R.M. Stair Jr., and N. Balakrishnan, “Managerial Decision Modeling with Spreadsheets,” 3rd edition, 2014, Pearson Education.
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##### 2.2 Additional Readings

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

1.	Wayne L. Winston. Microsoft Excel 2016: Data Analysis and Business Modeling. Microsoft Press, 2016.
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