

City University of Hong Kong
Course Syllabus

offered by Department of Management Sciences
with effect from Semester A 2017 /18

Part I Course Overview

Course Title: Solving Business Problems with Spreadsheet Modeling

Course Code: GE2255

Course Duration: One Semester

Credit Units: 3

Level: B2

Arts and Humanities

Proposed Area:
(for GE courses only)

Study of Societies, Social and Business Organisations

Science and Technology

Medium of Instruction: English

Medium of Assessment: English

Prerequisites:
(Course Code and Title) Nil

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

Equivalent Courses:
(Course Code and Title) Nil

Exclusive Courses:
(Course Code and Title) MS3261 Business Modeling with Spreadsheets
CB2011 Solving Business Problems with Spreadsheet 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 [#]	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 to non-specialists	20%		✓	✓
		100%			

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

[#] 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.	✓	✓	✓				
Group Project	Students work in small groups to solve particular business problems using spreadsheet modeling techniques and tools learned in the course. The project is designed to be a complete decision-making process, including data collection, problem formulation, modeling, analysis, solution methods 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	✓	✓	✓				20%	
Project	✓	✓	✓	✓			20%	
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. Group Project	Students work in small groups to produce a collaboratively written report. They need to document in a well-written report the details of the spreadsheet model of the business problem, and deliver an oral presentation in the class.	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	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.	to progress without 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, Prentice Hall.
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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 2013: Data Analysis and Business Modeling. Microsoft Press, 2014.
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A. Please specify the Gateway Education Programme Intended Learning Outcomes (PILOs) that the course is aligned to and relate them to the CILOs stated in Part II, Section 2 of this form:

GE PILO	Please indicate which CILO(s) is/are related to this PILO, if any (can be more than one CILOs in each PILO)
PILO 1: Demonstrate the capacity for self-directed learning	1 2 3 4
PILO 2: Explain the basic methodologies and techniques of inquiry of the arts and humanities, social sciences, business, and science and technology	1 2 3 4
PILO 3: Demonstrate critical thinking skills	1 2 3 4
PILO 4: Interpret information and numerical data	1
PILO 5: Produce structured, well-organised and fluent text	4
PILO 6: Demonstrate effective oral communication skills	4
PILO 7: Demonstrate an ability to work effectively in a team	1 2 3 4
PILO 8: Recognise important characteristics of their own culture(s) and at least one other culture, and their impact on global issues	Nil
PILO 9: Value ethical and socially responsible actions	Nil
PILO 10: Demonstrate the attitude and/or ability to accomplish discovery and/or innovation	1 2 3 4

GE course leaders should cover the mandatory PILOs for the GE area (Area 1: Arts and Humanities; Area 2: Study of Societies, Social and Business Organisations; Area 3: Science and Technology) for which they have classified their course; for quality assurance purposes, they are advised to carefully consider if it is beneficial to claim any coverage of additional PILOs. General advice would be to restrict PILOs to only the essential ones. (Please refer to the curricular mapping of GE programme: http://www.cityu.edu.hk/edge/ge/faculty/curricular_mapping.htm.)

B. Please select an assessment task for collecting evidence of student achievement for quality assurance purposes. Please retain at least one sample of student achievement across a period of three years.

Selected Assessment Task
Group project and presentation on solving a business problem using spreadsheet modelling. The project should describe the "translation" of a real-world situation into a mathematical programming format, use excel techniques to solve the problem, and deliver managerial insights from the results.