City University of Hong Kong
Course Syllabus

offered by Department of Economics and Finance
with effect from Semester A 2017/18

Part I Course Overview

Course Title:	**Financial Modelling**
Course Code:	**EF3622**
Course Duration:	**1 Semester**
Credit Units:	**3**
Level:	**B3**
Proposed Area: *(for GE courses only)*	☐ Arts and Humanities ☐ Study of Societies, Social and Business Organisations ☐ Science and Technology
Medium of Instruction:	**English**
Medium of Assessment:	**English**
Prerequisites: *(Course Code and Title)*	**FB3410 Financial Management or CB3410 Financial Management**
Precursors: *(Course Code and Title)*	**Nil**
Equivalent Courses: *(Course Code and Title)*	**Nil**
Exclusive Courses: *(Course Code and Title)*	**IS4822 Analysis for Financial Services**

Part II Course Details

1. Abstract

After the financial tsunami in 2008, there are on-going reforms in the finance industry. Financial budgets are tight and fewer staff members now perform more duties. To meet the needs of employers for finance professionals skilled in integrating Finance knowledge with programming tools, particularly Excel and VBA, professionals working in the financial markets need to have multiple talents, including programming, and in-depth understanding about the financial markets. Employers not only value strong academic background but also various soft skills, including computer literacy.

Students would have many opportunities to develop their discovery and innovative abilities as they design their Excel models to solve the various problems in commercial and investment banking, such as generating trade and portfolio reports, managing risks, etc.

Through working on various sample assignments and projects used in the investment banking environment, this course aims to help students to

(a) learn the essential knowledge of using Excel spreadsheet functions as a decision making tool for formulating suitable solutions to tackle real-world problems in the financial industry, and
(b) gain hands-on experience and professional skills of using Excel worksheet functions, pivot table, charts and VBA macros (Visual Basic Applications) for the practical implementation of financial model.

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 essential knowledge and skills of Excel worksheet functions, pivot tables, charts and VBA programming techniques for the practical implementation of financial models;	30%	√	√	
2.	Construct and design financial applications and solutions by integrating various functionalities of Excel and VBA;	30%	√	√	
3.	Use Excel as a decision making tool for devising suitable solutions to trading desks with respect to pricing and trading of financial products.	40%	√	√	√
** If weighting is assigned to CILOs, they should add up to 100%.*		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 real-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	
Lecture	Students are expected to be proficient in Excel and VBA. Through various exercises, they should be able to generate new ideas towards the challenges in the finance industry. Class activities: Demonstrate various Excel worksheet functions, pivot tables, charts and VBA programming. Illiterate the essential logic and techniques of designing Excel spreadsheet functions, pivot tables, charts and VBA with samples used in investment banking environment.	√	√	√	3 hours per week
Assignments	In-class discussion and practice. Assignments, projects and presentation. Assignments and projects will require students to explore the use of decision making system (Excel) and programming software (VBA). Students will learn how to use these tools and design their own analyses on financial modelling.	√	√	√	

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		
Continuous Assessment: 100%					
5 individual/group assignments	√	√	√	55%	
1 final group project with students' presentation	√	√	√	30%	
Attendance, contributions to in-class and group discussion	√	√	√	15%	
Examination: 0% (duration: , if applicable)					
** The weightings should add up to 100%.*				100%	

Students are required to pass both coursework and final group project/presentation components in order to pass the course.

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)
5 individual/group assignments	Demonstrate the capability of using Excel and VBA to solve problems and/or cases as assigned by the lecturer.	High	Significant	Moderate	Basic	Not even reaching marginal levels
1 final group project with students' presentation	Demonstrate the capability of using Excel and VBA to analyse, provide, and present solutions to larger complicated cases and issues in real world environment.	High	Significant	Moderate	Basic	Not even reaching marginal levels
Attendance, contributions to in-class and group discussion	Demonstrate the understanding of the course material and computing techniques during in-class discussions, group discussions, and participation.	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

- Why Excel and VBA?, Introduction to Excel functions, Introduction to VBA Macro applications
- FX and rates arbitrage
  - Web query from Excel to accessing financial data on the Internet and calculating FX and rates arbitrage opportunities with Excel worksheet functions
- Bond pricer
  - Modelling various types of bonds and calculating price/yields using Excel financial calculation functions
- Trade blotter
  - Setting up a simple trade capturing and reporting system using VBA, various Excel spreadsheet functions and different data validation techniques
- Portfolio report – exposure and risk limit
  - An Excel based risk manager's tool for monitoring trading desk's risk exposure and generating risk reports
- Portfolio report – position aggregation
  - Historical data manipulation and calculation using VBA and Excel spreadsheet functions
- Reports for analyzing derivatives warrants/CBBC market in Hong Kong
  - Analyzing market data and comparing different Excel data handling techniques (eg pivot table, lookup with multiple factors, VBA) in terms of computational efficiency and implementation
- Correlation matrix calculations
  - Automatic correlation matrix calculation and charting system based on dynamic range of time series data
- Times series and back-testing for risk management
  - Historical data manipulation and calculation using VBA and essential Excel worksheet functions with the focus of risk management
- Excel automation tools: from data refresh, calculation to reports generations
  - Typical front and middle office automation tasks using different Excel automation tools

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.	Financial modelling, by Simon Benninga, MIT press, latest edition

2.2 Additional Readings

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

1.	Excel 2003 Power Programming With VBA, by John Walkenbach, Wiley, latest edition
2.	Excel 2007 PivotTables Recipes: A Problem-Solution Approach, by Debra Dalgleish, Apress, latest edition
3.	Options, Futures, and Other Derivative, by John Hull, Prentice Hall, latest edition
4.	Professional Financial Computing Using Excel & VBA (2010), by Humphrey K.K. Tung, Donny C.F. Lai and Michael C.S. Wong with Stephen Ng, John Wiley & Sons (Asia) Pte. Ltd.