City University of Hong Kong

Information on a Course
offered by the Department of Economics and Finance
with effect from Semester A in 2013 / 2014

Part I

Course Title: Spreadsheet Modeling in Finance

Course Code: EF5213

Course Duration: 1 semester (39 hours)

Credit Units: 3

Level: P5

Medium of Instruction: English

Prerequisites: Nil

Precursors: EF5050 Derivatives and Risk Management
EF5210 Option Pricing
MA5182 Mathematical Methods in Finance

Equivalent Courses: Nil

Exclusive Courses: Nil

Part II

Course Aims

This course aims to enable students to apply integrated spreadsheet programming skills to solve real-life financial problems, to equip students with the capability of performing numerical computations in financial engineering, to provide students with the practical knowledge of modern financial models.

Course Intended Learning Outcomes (CILOs)
Upon successful completion of this course, students should be able to:

No.	CILOs	Weighting (if applicable)
1.	Apply integrated spreadsheet programming skills to design effective solution for real-life financial problems	

2.	Identify the key elements of numerical computation in financial engineering, and develop flexible and robust solutions with good programming practices	
3.	Apply the numerical techniques in financial engineering to design complex algorithms and solutions for modern financial models	
4.	Apply the practical knowledge in financial modelling to develop integrated numerical solutions for real market products	

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 (if applicable)
CILO 1	Lectures, class discussions, and computer laboratories	3
CILO 2	Lectures, class discussions, and computer laboratories	3
CILO 3	Lectures, class discussions, and computer laboratories	3
CILO 4	Lectures, class discussions, and computer laboratories	3

Assessment Tasks/Activities

(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.	Type of Assessment Tasks/Activities	Weighting (if applicable)	Remarks
CILO 1	Assignments and laboratory work		
CILO 2	Assignments and laboratory work		
CILO 3	Assignments and laboratory work		
CILO 4	Assignments and laboratory work		

Assessment Methods

	Coursework	Final Exam	Total
CILO 1-4	100%	Nil	100%

Grading of Student Achievement:

According to the defined grading criteria in Academic Regulations for Taught Postgraduate Degrees.

Part III

Keyword Syllabus

Numerical and Statistical Computations in EXCEL/VBA
GARCH(1,1) Model
Finite Difference Method and Crank-Nicholson Scheme
Portfolio Mean-Variance Optimization and Markowitz Algorithm
Multi-variable Newton-Raphson Procedure
Yield Curve Construction using Cubic Spline
Binomial Tree Pricing of Exotic Options
Black-Derman-Toy Model for Interest Rate Derivatives
Monte-Carlo Option Pricings
Least-Square Monte-Carlo Pricings of American Options

Text(s)

Humphrey Tung, Donny Lai, and Michael Wong with Stephen Ng, <u>Professional Financial Computing Using Excel & VBA</u> , John Wiley & Sons, Singapore, 2010, ISBN 978-0-470-82439-9.

Recommended Reading

Mary Jackson, <u>Advanced Modelling in Finance using EXCEL and VBA</u>, John Wiley and Sons, current edition.

Simon Benninga, <u>Financial Modelling</u>, MIT Press, current edition.

Online Resources

Nil