

**City University of Hong Kong**

**Information on a Course**  
**offered by Department of Management Sciences**  
**with effect from Semester A in 2013 / 2014**

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**Part I**

Course Title: Statistical Modelling in Economics and Finance

Course Code: MS6217

Course Duration: One Semester

No. of Credit Units: 3

Level: P6

Medium of Instruction: English

Prerequisites: Nil

Precursors: MS5213 Statistical Methods II or equivalent

Equivalent Courses: Nil

Exclusive Courses: Nil

**Part II**

**Course Aims**

This course aims to

- Provide students with a solid understanding of the range of econometric techniques used in economic and financial analysis; Special emphasis is placed on the analysis of economic and financial time series;
- Demonstrate the relevance of these econometric techniques through examples and case studies;
- Acquaint students with the necessary computing knowledge to execute an analysis;
- Provide students with a basic knowledge of economics, finance and the options market

## Course Intended Learning Outcomes (CILOs)

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

No.	CILOs	Weighting
1	Apply the economic models and econometric techniques learnt in the course to solve real world problems	N.A.
2	Select the most appropriate econometric techniques for a given problem	N.A.
3	Translate a general question into specific questions for technical analysis	N.A.
4	Gain a working knowledge of the relevant academic literature in econometrics	N.A.
5	Evaluate the validity of the econometric findings	N.A.
6	Appreciate the relevance of statistics in economics and finance	N.A.
7	Understand the basic operations of financial market and apply such knowledge in investment and other financial decisions	N.A.
8	Communicate and explain the findings to non-specialists	N.A.

## 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, 4, 5, 6	1. Lectures The concepts and statistical properties of the forecasting techniques and their relevance to business and economics are explained. The strengths and weaknesses of the techniques, and how they can be used to tackle different business problems are discussed in details. Case studies and examples are used to illustrate the forecasting techniques in practice. There will also be opportunities for peer interactions in the lectures through group discussions.	N.A.
1, 2, 3, 5, 6, 7	2. Computer Laboratory Sessions Hands-on experience with the forecasting techniques and problem solving activities based on real world business data using the SAS software. During the laboratory sessions, the instructor can identify problems encountered by students and provide assistance. The laboratory sessions consolidate and supplement what the students learn in lectures. There will be opportunities for students to work together and help each other.	N.A.
1, 2, 3, 5, 6, 7, 8	3. Group Discussions & Presentation Group discussions on major issues in class. Team members take turns to present the contents.	N.A.
2, 3, 4, 5, 6, 7	4. Reading Assignments	N.A.

## Constructive Alignment of ILOs and Teaching and Learning Activities

	TLA 1	TLA 2	TLA 3	TLA 4
CILO 1	✓	✓	✓	
CILO 2	✓	✓	✓	✓
CILO 3	✓	✓	✓	✓
CILO 4	✓			✓
CILO 5	✓	✓	✓	✓
CILO 6	✓	✓	✓	✓
CILO 7		✓	✓	✓
CILO 8			✓	

### 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)

Assignments, Projects or Tests (100%).

No.	Type of assessment tasks/activities	Weighting (if applicable)
CILO 1,2,3,4,5,6,7,8	Assignments/Projects/Tests	100%

## Constructive Alignment of ILOs and Assessment Methods

	AT 1	AT 2	AT 3	AT 4
CILO 1	✓			✓
CILO 2	✓	✓		✓
CILO 3	✓	✓		
CILO 4		✓		
CILO 5	✓	✓		✓
CILO 6		✓		
CILO 7	✓	✓		
CILO 8			✓	

## Grading of Student Achievement:

### Assignment

Grade	Grade Point	Grade Definitions	
A+	4.3	Excellent:	Strong evidence of knowing how to apply the relevant software in performing econometric analysis
A	4.0		
A-	3.7		
B+	3.3	Good:	Evidence of knowing how to apply the relevant software in performing econometric analysis
B	3.0		
B-	2.7		
C+	2.3	Adequate:	Some evidence of knowing how to apply the relevant software in performing econometric analysis
C	2.0		
C-	1.7		

D	1.0	Marginal:	Sufficient familiarity with the subject matter to enable the student to progress without repeating the assignment
F	0.0	Failure:	Little evidence of familiarity with the subject matter

### Project

Grade	Grade Point	Grade Definitions	
A+	4.3	Excellent:	Clearly and correctly states most critical points and important findings of the project. Discusses issues critically. Demonstrates awareness of relevant implications for practical issues. Good presentation skills. Evidence of familiarity with literature.
A	4.0		
A-	3.7		
B+	3.3	Good:	Clearly and correctly states some critical points and important findings of the project. Discusses issues critically. Demonstrates some awareness of relevant implications for practical issues. Good presentation skills.
B	3.0		
B-	2.7		
C+	2.3	Adequate:	Clearly and correctly states some critical points and the findings.
C	2.0		
C-	1.7		
D	1.0	Marginal:	States a few critical points and the findings.
F	0.0	Failure:	Little evidence of familiarity with the subject matter; weakness in critical and analytic skills.

### Test

Grade	Grade Point	Grade Definitions	
A+	4.3	Excellent:	Strong evidence of original thinking; good organization, capacity to analyze and synthesize; superior grasp of subject matter; evidence of extensive knowledge base.
A	4.0		
A-	3.7		
B+	3.3	Good:	Evidence of grasp of subject, some evidence of critical capacity and analytic ability; reasonable understanding of issues; evidence of familiarity with literature.
B	3.0		
B-	2.7		
C+	2.3	Adequate:	Some evidence of grasp of subject, little evidence of critical capacity and analytic ability; reasonable understanding of issues.
C	2.0		
C-	1.7		
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.

## **Part III**

### **Keyword Syllabus**

1. Seasonal Box-Jenkins and Transfer Function Models

Seasonal ARIMA; Impulse response function; prewhitening; cross-correlation; lead time;

2. ARCH and GARCH Models

Autoregressive Conditional Heteroscedasticity, volatility, high frequency financial data

3. Value at Risk (VaR) and Expected Shortfall (ES)

Methods for calculating VaR and ES; quantile regression; L-estimator; trade-risk profile

4. Option Pricing Models

Option payoff and strategies, Binomial Option Pricing and Black-Scholes Option Pricing Models

### **Recommended Reading**

Brooks, C. Introductory Econometrics for Finance, Cambridge, 2002

Benninga, S. Financial Modeling, MIT Press, 2001

Online Resources:

Econometriclinks.com: <http://www.feweb.vu.nl/econometriclinks/>