

**City University of Hong Kong
Course Syllabus**

**offered by Department of Economics and Finance
with effect from Semester A 2019/20**

Part I Course Overview

Course Title: Financial Econometrics

Course Code: EF4822

Course Duration: 1 semester

Credit Units: 3

Level: B4

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: EF3320 Security Analysis and Portfolio Management
(Course Code and Title)

Precursors: Nil
(Course Code and Title)

Equivalent Courses: Nil
(Course Code and Title)

Exclusive Courses: Nil
(Course Code and Title)

Part II Course Details

1. Abstract

This course aims to equip students with econometric methods to analyse financial time series in the respect of risk and return, and return predictability and portfolio allocation. Students are expected to gain practical experience in analysing financial and macroeconomic data.

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.	Apply econometric methods to analyse financial time series		√	√	√
2.	Implement time-series return predictability regressions			√	√
3.	Analyse portfolio allocation problems with risk assessment			√	√

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	
1	Lectures	√	√	√	3 hours per week
2	Project	√	√	√	

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: 50%					
Assignments Assignments on basic statistics and R programming, and on application of R to financial time series analysis, including ARMA models, capital asset pricing model, and portfolio allocation, demonstrating their understanding of the concepts of time series analysis and their ability to apply R programming to real financial time series analysis.	√	√	√	30%	
Project One project on applying return predictability analysis to Hong Kong stock market with the use of R programming, demonstrating their skills to deal with data, analyse financial time series, and perform return predictability analysis.	√	√	√	20%	
Examination: 50% (duration: 2hours, if applicable)					
Examination One final examination on concepts and analytics of financial time series, and on R programming examples of financial time series analysis, demonstrating their understanding of the concepts of time series analysis and their knowledge about applying R programming to financial time series analysis.	√	√	√	50%	
				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)
Assignments	Analytical and programming skills	Demonstrate excellent knowledge in the subject, and a superior grasp of the critical issue and techniques	Demonstrate good knowledge in the subject, and a good grasp of the critical issue and techniques	Demonstrate adequate knowledge in the subject, and adequate grasp of the critical issue and techniques	Demonstrate limited knowledge in the subject, and some idea of the critical issue and techniques	Demonstrate poor knowledge in the subject, and no awareness of the critical issue and techniques
Projects	Analytical, programming, and writing skills	Demonstrate excellent knowledge in the subject, and a superior grasp of the critical issue and techniques	Demonstrate good knowledge in the subject, and a good grasp of the critical issue and techniques	Demonstrate adequate knowledge in the subject, and adequate grasp of the critical issue and techniques	Demonstrate limited knowledge in the subject, and some idea of the critical issue and techniques	Demonstrate poor knowledge in the subject, and no awareness of the critical issue and techniques
Examination	Analytical skills and knowledge about programming	Demonstrate excellent knowledge in the subject, and a superior grasp of the critical issue and techniques	Demonstrate good knowledge in the subject, and a good grasp of the critical issue and techniques	Demonstrate adequate knowledge in the subject, and adequate grasp of the critical issue and techniques	Demonstrate limited knowledge in the subject, and some idea of the critical issue and techniques	Demonstrate poor knowledge in the subject, and no awareness of the critical issue and techniques

Part III Other Information (more details can be provided separately in the teaching plan)

1. Keyword Syllabus

Financial Time Series Analysis and its Applications
ARMA Models
Time-Series Return Predictability
Efficient Portfolios and Capital Asset Pricing Model
Portfolio Allocation and Risk Assessment

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.)

Introductory

1.	Robert H. Shumway, and David S. Stoffer, Time Series: A Data Analysis Approach Using R, Chapman and Hall/CRC, 2019. (Chapter 1, 2, 3, 4)
2.	Jianqing Fan, and Qiwei Yao. The Elements of Financial Econometrics, Cambridge University Press, 2017. (Chapter 5, 7)

2.2 Additional Readings

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

Intermediate

1.	Robert H. Shumway, and David S. Stoffer, Time Series Analysis and Its Applications: with R Examples, Springer, 2017.
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Advanced

1.	Ruey S. Tsay, Analysis of Financial Time Series, John Wiley & Sons, New Jersey, 2010.
2.	John Y. Campbell, Andrew W. Lo and A. Craig MacKinlay, The Econometrics of Financial Markets, Princeton University Press, 1997.