



教學計劃表 Syllabus

課程名稱(中文) Course Name in Chinese	時間序列分析	學年/學期 Academic Year/Semester	100/2
課程名稱(英文) Course Name in English	Time Series Analysis		
科目代碼 Course Code	IIE_56900	系級 Department & Year	碩士 Course-Offering Department
修別 Type	選修 Elective	學分數/時間 Credit(s)/Hour(s)	3.0/3.0
授課教師 Instructor	/林金龍		
先修課程 Prerequisite	/		
課程描述 Course Description			
<p>This course focuses exclusively on Time Series Analysis (TSA) designated for graduate students majoring in economics or finance. Cointegration and introductory financial econometrics are two main topics.</p> <p>The course starts with a lecture introducing stochastic process, time series model and statistical package R. I then spend 3 lectures covering conventional univariate time analysis, including identification, estimation, diagnostic checking and forecasting of a time series model. Unit root and cointegration econometrics makes the second part. The third and main part comprises univariate ARCH/GARCH, multivariate GARCH models and stochastic volatility models. Finally two frequently used methods in finance: event study and matching theory are covered.</p> <p>The former topic assesses the impact of some particular event on the target variables before and after the event. Obviously, the target variables are in timeseries context. The latter topic estimates the causal treatment effect where cross sectional data are involved. Both are extremely important and useful methods frequently used in finance and economic studies. They both involve, of course, some econometric theory but the core theory are not too difficult to learn.</p> <p>Similar to any other field of economics and finance, intuition and creative ideas constitute the flesh and bone of TSA. I am aiming at equipping the students with proper tools for advanced empirical work and lay the foundation for theoretical research in TSA. In addition to econometric theory, I also emphasize computational aspects of these complicated econometric techniques. R, is the main statistical packages used in this course. Homework assignments using R will be given but there is no programming question in the midterm exam</p>			
課程目標 Course Objectives			
<p>本課程主要是介紹計量時間序列方法，課程目標是建立學生有關總體經濟或財務時間序列分析的研究基礎，以便從事總體經濟實證或財務經濟學的實證分析</p>			
<p>圖示說明 Illustration : ● 高度相關 Highly correlated ○ 中度相關 Moderately correlated</p>			
授課進度表 Teaching Schedule & Content			
週次 Week	內容 Subject/Topics	備註 Remarks	
1	Introduction to Stochastic Process, Time series and R		
2	ARIMA modelling (I)		
3	ARIMA modelling (II)		
4	Theory of Forecasting		

5	VAR and Impulse response analysis	
6	Introduction to unit root and cointegration (I)	
7	Introduction to unit root and cointegration (II)	
8	Univariate GARCH (I)	
9	期中考試週 Midterm Exam	
10	Univariate GARCH (II)	
11	Multivariate GARCH and stochastic volatility models (I)	
12	Multivariate GARCH and stochastic volatility models (II)	
13	Event study (I)	
14	Event study (II)	
15	Score Matching (I)	
16	Score Matching (II)	
17	Lab works	
18	期末考試週 Final Exam	

教學策略 Teaching Strategies

- 課堂講授 Lecture
 分組討論 Group Discussion
 參觀實習 Field Trip
 其他 Miscellaneous:

學期成績計算及多元評量方式 Grading & Assessments

配分項目 Items	配分比例 Percentage	多元評量方式 Assessments							
		測驗 會考	實作 觀察	口頭 發表	專題 研究	創作 展演	卷宗 評量	證照 檢定	其他
平時成績 General Performance	30%	✓							
期中考成績 Midterm Exam	30%	✓							
期末考成績 Final Exam	0%								
作業成績 Homework and/or Assignments									
其他 Miscellaneous (term paper)	40%				✓				

評量方式補充說明
Grading & Assessments Supplemental instructions

教科書與參考書目 (書名、作者、書局、代理商、說明)
Textbook & Other References (Title, Author, Publisher, Agents, Remarks, etc.)

Textbook:

Ngai Hang Chan, 2010, Time Series: Applications to Finance with R and S-plus, 2nd, John Wiley

Reference Books:

Ruey S. Tsay, 2010, Analysis of Financial Time Series 3rd edition, New York: John Wiley

G.E.P. Box, G.M. Jenkins and G.C. Reinsel, Time Series Analysis: Forecasting and Control, 3rd edition, Prentice Hall, 1994.

Clive W.J. Granger Forecasting Economic Time Series, 2nd edition Academic Press 1986

Johansen, S. (1995) Likelihood-based inference in cointegrated vector autoregressive models, Oxford: Oxford University Press

Helmut Lutkepohl, Introduction to multiple Time Series Analysis, 2nd edition, Springer-Verlag 1993

課程教材網址 (教師個人網址請列在本校內之網址)
Teaching Aids & Teacher's Website (Personal website can be listed here.)

faculty.ndhu.edu.tw/~jlin

其他補充說明 (Supplemental instructions)