

國立中山大學 108學年度第2學期 課程教學大綱

National Sun Yat-sen University 108Academic year Course syllabus

中文名稱 Course name(Chinese)	時間數列分析	課號 Course Code	ECON536
英文名稱 Course name(English)	TIME SERIES ANALYSIS		
課程類別 Type of the course	講授類	必選修 Required/Selected	選修
授課教師 Instructor	李慶男	系所 Dept./faculty	經濟學研究所 碩士班
		學分 Credit	3

因應嚴重特殊傳染性肺炎(武漢肺炎)，倘若後續需實施遠距授課，授課方式調整如下：

- ☒ 同步遠距【透過網路直播技術，同時進行線上教學，得採Microsoft Teams、Adobe connect等軟體進行】
- ☐ 同步遠距含錄影【透過網路直播技術，同時進行線上教學並同時錄影，課程內容可擇日再重播，得採Microsoft Teams、Adobe connect等軟體進行】
- ☐ 非同步遠距【課堂錄影或錄製數位教材放置網路供學生可非同時進行線上學習，得採EverCam、PPT簡報錄影、錄音方式進行】
- ☐ 實作類課程，經評估無法採遠距課程教學，後續復課後密集補課

★遠距教學軟體操作說明連結

因應嚴重特殊傳染性肺炎(武漢肺炎)，倘若後續需實施遠距授課，評分方式調整如下：

- 1.Home-Work：30%
- 2.Final Exam：20%
- 3.Term Paper：50%

課程大綱 Course syllabus

This is a course in Macro econometrics. Econometrics is concerned with the systematic study of economic phenomena using observed data. We will mainly concern on the treatment of parametric modeling. (Therefore, there is a field called Nonparametric Econometrics—see Pagan and Ullah, 1999, Nonparametric Econometrics)

To study the econometrics parametrically, we will first discuss regression analysis. The regression analysis put some variables (especially economic variables) to be some function (linear or nonlinear) of other economic variables and verse vise. These constitute the study of multiple regression and simultaneous equations model.

On the other hand, time series analysis of econometrics, we regard the economics variable is coming from some stochastic mechanism of her own past and new innovation (unit variable time series analysis) and even stochastic function of other variables past value and innovation (vector time series analysis). These two views of econometrics is now somewhat merging. (See Granger, 2001, Macro Econometrics – Past and Future, Journal of Econometrics, 100). With this statistical background, I hope you will have the basic skill to read modern therical Journal article.

課程目標 Objectives

- Let student be more familiar with Time Series Analysis.
- 在修習完本課程後，預期之學習成效包含：
1. 系所專業能力-經濟分析：設定適當之經濟變數以透過經濟模型來分析總體經濟議題。
 2. 系所專業能力-專業技術：能瞭解總體實證經濟常用的研究方法以分析且預測總體經濟現象。
 3. 系所專業能力-問題解決能力：能尋找有興趣的總體經濟問題，並利用學習之研究方法來尋找答案。
 4. 全校學生基本素養與核心能力方面-表達與溝通能力：透過課程討論能流暢使用淺白易懂之語句與他人進行討論。
 5. 全校學生基本素養與核心能力方面-探究與批判思考能力：能找出影響總體議題的主要變數且進行分析與預測。

授課方式 Teaching methods

An oral instruction will be employed within all class

評分方式〔評分標準及比例〕Evaluation (Criteria and ratio)等第制單科成績對照表 [letter grading reference](#)

- 1.Home-Work : 30%
- 2.Final Exam : 20%
- 3.Term Paper : 50%

參考書/教科書/閱讀文獻 Reference book/ textbook/ documents

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序號	作者	書名	出版社	出版年	出版地	ISBN#
No.	Author	Title	Publisher	Year of publish	Publisher place	ISBN#
1	Greene, W. H.	Econometric Analysis, 4th Edition, (Required)	Prentice Hall	2000		
2	Hamilton, J. D.	Time Series Analysis(Required)	Princeton University Press	1994		
3	White, H.	Asymptotic Theory For Econometricians(Recommended)	Academic Press.	2001		
4	Spanos, A	Statistical Foundations of econometric Modeling	Cambridge University press	1986		

每週課程內容及預計進度 Weekly scheduled progress

週次	日期	授課內容及主題
Week	Date	Content and topic
1	2020/02/27~2020/02/29	Statistical Review: sample space, random variable, parametric probability model, sampling, estimation, hypothesis testing. (Spanos)
2	2020/03/01~2020/03/07	Difference equation
3	2020/03/08~2020/03/14	Lag Operators
4	2020/03/15~2020/03/21	Stationary ARMA Model (Hamilton, Ch.3, 5) (i). Population Characteristics (ii). Estimation.
5	2020/03/22~2020/03/28	Stationary ARMA Model (Hamilton, Ch.3, 5) (i). Population Characteristics (ii). Estimation.
6	2020/03/29~2020/04/04	Stationary ARMA Model (Hamilton, Ch.3, 5) (i). Population Characteristics (ii). Estimation.
7	2020/04/05~2020/04/11	
8	2020/04/12~2020/04/18	Asymptotic Distribution Theory: i.i.d. process, serially correlated process, and Martingale Difference process. (Hamilton, Ch. 7, White) (i). Law of large number. (ii). Central Limit Theorem
9	2020/04/19~2020/04/25	Stationary Vector Time Series (Hamilton, Ch. 10, 11)(i). Law of large number.(ii). Central Limit Theorem
10	2020/04/26~2020/05/02	期中考
11	2020/05/03~2020/05/09	Stationary Vector Time Series (Hamilton, Ch. 10, 11)(i). Law of large number.(ii). Central Limit Theorem
12	2020/05/10~2020/05/16	Models of Nonstationary Time Series (Hamilton, Ch. 15) (i). Trend Stationary Process (ii). Difference Stationary Process
13	2020/05/17~2020/05/23	Models of Nonstationary Time Series (Hamilton, Ch. 15) (i). Trend Stationary Process (ii). Difference Stationary Process
14	2020/05/24~2020/05/30	Univariate Process with Unit Roots: (Hamilton, Ch. 17) (i). Brownian Motion(ii). Functional Central Limit Theorem (iii). Dickey-Fuller test (iv). Phillips-Perron Tests(v). Augmented Dickey-Fuller Test
15	2020/05/31~2020/06/06	Spurious Regression: (Hamilton, Ch. 18)
16	2020/06/07~2020/06/13	Cointegration: (Hamilton, Ch. 19) (i). Granger Representation Theorem (ii). Engle-Granger Two Step method
17	2020/06/14~2020/06/20	Johansen's Maximum Likelihood Analysis of Cointegrated System
18	2020/06/21~2020/06/24	期末考

課業討論時間 Office hours

時段1 Time period 1:
 時間 Time：星期一15:00~17:00
 地點 Office/Laboratory：SS 3002
 時段2 Time period 2：
 時間 Time：星期四15:00~17:00
 地點 Office/Laboratory：SS 3002

系所學生專業能力/全校學生基本素養與核心能力 basic disciplines and core capabilities of the department and the university

系所學生專業能力/全校學生基本素養與核心能力 basic disciplines and core capabilities of the department and the university	課堂活動與評量方式 Class activities and evaluation										
	本課程欲培養之能力與素養 This course enables students to achieve.	紙筆考試或測驗 Test.	課堂討論(含個案討論) Group discussion (case analysis).	個人書面報告、作業、作品、實驗 Individual paper report/assignment/work or experiment.	群組書面報告、作業、作品、實驗 Group paper report/assignment/work or experiment.	個人口頭報告 Individual oral presentation.	群組口頭報告 Group oral presentation.	課程規劃之校外參訪及實習 Off-campus visit and intership.	證照/檢定 License.	參與課程規劃之校內外活動及競賽 Participate in off-campus/on-campus activities and competitions.	課外閱讀 Outside reading.
※系所學生專業能力 Basic disciplines and core capabilities of the department											
1.經濟分析。 1. The ability to conduct economic analysis.	V					V					
2.專業技術。 2. The ability to improve professional skills.	V	V		V		V					
3.國際視野與國際移動能力。 3. The ability to form international visions and work across countries.											
4.守法紀與積極進取的態度。 4. The attitudes to abide laws and to take initiatives.											
5.問題解決能力。 5. The ability to solve problems.	V	V			V	V					
6.職涯發展的瞭解及規劃。 6. The ability to understand career options and conduct career planning.											
7.專業能力與職涯發展。 7. The ability to achieve proficiency	V	V			V	V	V				

[illegible]

Reinforcing problem solving ability.											
※全校學生基本素養與核心能力 Basic disciplines and core capabilities of the university											
1.表達與溝通能力。 1. Articulation and communication skills	V				V			V			
2.探究與批判思考能力。 2. Inquisitive and critical thinking abilities	V										
3.終身學習能力。 3. Lifelong learning											
4.倫理與社會責任。 4. Ethics and social responsibility											
5.美感品味。 5. Aesthetic appreciation											
6.創造力。 6. Creativity	V			V		V					
7.全球視野。 7. Global perspective											
8.合作與領導能力。 8. Team work and leadership	V		V								
9.山海胸襟與自然情懷。 9. Broad-mindedness and the embrace of nature											