



教學計劃表 Syllabus

課程名稱(中文) Course Name in Chinese	資料科學		學年/學期 Academic Year/Semester	110/1
課程名稱(英文) Course Name in English	Data Science			
科目代碼 Course Code	EC_D0060	系級 Department & Year	博士	開課單位 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	/李同穌			
先修課程 Prerequisite				
課程描述 Course Description				
Data Science is the study of the generalizable extraction of knowledge from data. Data scientist use those studies to make predictions and find insights from the data. In this class R is the primary tool to do the analytical works. I will introduce various methods in three major areas which are data manipulation, visualization and fundamental statistical learning.				
課程目標 Course Objectives				
1、Manipulating data for anlysis 2、Visualizing data for analytical purpose 3、Utilizing different tools to analyze data				
系專業能力 Basic Learning Outcomes				課程目標與系專業能力相關性 Correlation between Course Objectives and Dept.' s Education Objectives
A	數理分析能力：通曉經濟學的高階理論技巧，應用數學與賽局解決經濟議題的能力 Mathematical analysis skills: Mastering in advanced application of mathematical theories and game theory in analyzing economic issues			●
B	實證經濟分析能力：通曉經濟學的高階實證技巧，善用資訊科技進行資訊蒐集、資料統計與計量分析。 Empirical analysis skills: Mastering in advanced application of statistics and econometrics in data collection and examination			●
C	觀經濟之闡釋能力：通曉高階個體經濟學相關的理論與應用 Microeconomic perspective: Thorough understanding of advanced microeconomic theories and relevant application			○
D	宏觀經濟之闡釋能力：通曉高階總體經濟學相關的理論與應用 Macroeconomic perspective: Thorough understanding of advanced macroeconomic theories and relevant application			○
E	樂活能力：具備適應現代社會的高階學養以及就業能力 Employment opportunities: Capabilities of advanced working on important policy and decision challenges in business and government			
F	溝通表達能力：思路清晰，有能力與人溝通並撰寫高階專業研究報告 Communication skills: Having a clear mind and profound ability in presenting advanced professional academic research			
圖示說明 Illustration : ● 高度相關 Highly correlated ○ 中度相關 Moderately correlated				
授課進度表 Teaching Schedule & Content				
週次 Week	內容 Subject/Topics			備註 Remarks
1	Introduction			
2	R I, book(1), ch 1-3			

3	No class, national holiday	
4	R II, book(1), ch 4-6	
5	R III, book(1), ch 7-9	
6	R IV, book(1), ch 10-12	
7	R V, book(1), ch 13-15	
8	R VI, book(1), ch 16-19	
9	Data manipulation: dplyr package	
10	Data manipulation: tidyr package	
11	Data manipulation: data.table package	
12	Data visualization: ggplot2 package	
13	Data visualization: ggplot2 and ggvis package	
14	Rcommander ch 1-5	
15	Rcommander ch 6-8	
16	Rcommander ch 9-12	
17	R Markdown package	
18	Project presentation	

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:

教學創新自評 Teaching Self-Evaluation

創新教學(Innovative Teaching)

- 問題導向學習(PBL)
 團體合作學習(TBL)
 解決導向學習(SBL)
 翻轉教室 Flipped Classroom
 磨課師 Moocs

社會責任(Social Responsibility)

- 在地實踐 Community Practice
 產學合作 Industry-Academia Cooperation

跨域合作(Transdisciplinary Projects)

- 跨界教學 Transdisciplinary Teaching
 跨院系教學 Inter-collegiate Teaching

- 業師合授 Courses Co-taught with Industry Practitioners

其它 other:

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	20%		✓						
期中考成績 Midterm Exam									
期末考成績 Final Exam									
作業成績 Homework and/or Assignments	40%		✓						
其他 Miscellaneous (Project)	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.)

- (1) R軟體:應用統計方法, 陳景祥, 東華書局
- (2) 資料分析輕鬆學 R Commander高手捷徑, 何宗武, 雙葉書廊

課程教材網址(含線上教學資訊, 教師個人網址請列位於本校內之網址)

Teaching Aids & Teacher's Website(Including online teaching information.
Personal website can be listed here.)

Online class, if any.
google meet: <https://meet.google.com/ydv-bqnu-bex>

其他補充說明 (Supplemental instructions)