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國立東華大學

課　　綱　Course Outline

經濟學系博士班國際組

中文課程名稱 Course Name in Chinese	資料科學				
英文課程名稱 Course Name in English	Data Science				
科目代碼 Course Code	EC__D0060	班 別 Degree	博士班 Ph.D.		
修別 Type	選修 Elective	學分數 Credit(s)	3.0	時 數 Hour(s)	3.0
先修課程 Prerequisite					

課程目標
Course Objectives

1、Manipulating data for anlaysis
2、Visualizing data for analytical purpose
3、Utilizing different tools to analyze data

系教育目標
Dept.'s Education Objectives

1	培育具獨立學術研究與專業能力之優秀經濟人才。 Foster potential talents with professional knowledge and empirical skills in economics.

	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	微觀經濟之闡釋能力：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	自我調整適應社會之能力：具備適應現代社會的學養以及就業能力。 Employment opportunities: capabilities of 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

課程大綱
Course Outline

1、Introduction to R
3、R data structure
4、R visualization (1))
5、R visualization (2)
6、R library for data manipulation (1)
7、R library for data manipulation (2)
8、Writing R code
9、Writing R function
10、Data analysis - statistical fundamentals
11、Linear regression
12、Classification
13、Resampling
14、Linear model selection
15、Non-linear model
16、Decision tree

資源需求評估（師資專長之聘任、儀器設備的配合・・・等）
Resources Required (e.g. qualifications and expertise, instrument and equipment, etc.)

課程要求和教學方式之建議
Course Requirements and Suggested Teaching Methods

其他
Miscellaneous