國立東華大學
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		111/1
課程名稱(英文) Course Name in English	Data Science						
科目代碼 Course Code	EC__50420	系級 Department & Year	碩士	開課單位 Course-Offering Department		經濟學系	
修別 Type	必修 Required	學分數/時間 Credit(s)/Hour(s)		3.0/3.0			
授課教師 Instructor	/李同龢						
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

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 Basic	
3	Data wrangling	
4	No class, national holiday	
5	Graphics and Statistical learning, ISL, Ch. 2	
6	Linear regression, ISL, Ch. 3	
7	Classification, ISL, Ch. 4	
8	Resampling methods, ISL, Ch. 5	
9	Midterm project presentation	
10	Linear model selection and regularization, ISL, Ch. 6	
11	Moving beyond linearity, ISL, Ch. 7	
12	Tree-based methods, ISL, Ch. 8	
13	Support vector machine, ISL, Ch. 9	
14	Unsupervised learning, ISL, Ch. 10	
15	Association analysis	

16	Neural networks and deep learning	
17	Text mining	
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 Industy-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.)

Recommended Textbook: Introduction to Statistical Learning (ISL), James, Witten, Hastie and Tibshirani, 2017.
R for Data Science, Grolemund and Wickham, r4ds.had.co.nz

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.
 https://meet.google.com/wxm-xmtn-yqj

其他補充說明 (Supplemental instructions)