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## ②图玄東華大學

# 教學計劃表 Syllabus

課程名稱(中文) Course Name in Chinese	機器學習入門				學年/學期 Academic Year/Semester		112/2	
課程名稱(英文) Course Name in English	Introduction to Machine Learning							
科目代碼 Course Code	EC34370	系級 Department 學三 & Year		開課單位 Course-Offering Department	經濟學系			
修別 Type	學程 Program	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

機器學習是利用電腦摹擬人類學習的方式,可以使得電腦取代部份人類的工作,進而達到增加人類生產力的目的。這是一門機器學習入門課,提供給非理工科學生學習機器學習,因此比較強調應用面,教學生如何利用機器學習的技術應用在工作上,以增加生產力。

教科書: An Introduction to Statistical Learning with Applications in Python, James, Witten, Hastie, Tibshirani and Taylor, 2023.

#### 課程目標 Course Objectives

機器學習是利用電腦摹擬人類學習的方式,可以使得電腦取代部份人類的工作,進而達到增加人類生產力的目的。這是一門機器學習入門課,提供給非理工科學生學習機器學習,因此比較強調應用面,教學生如何利用機器學習的技術應用在工作上,以增加生產力。

	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:應用數學與賽局理論分析與解決經濟議題的能力。Mathematical analysis skills: application of mathematical theories and game theory to analyze economic issues	•
В	實證經濟分析能力:善用資訊科技進行資訊蒐集、資料統計與計量分析。Empirical analysis skills: application of statistics and econometrics in data collection and examinatio	•
С	微觀經濟之闡釋能力:通曉個體經濟學相關的理論與應用。Microeconomic perspective: understanding of microeconomic theories and relevant application	0
D	宏觀經濟之闡釋能力:通曉總體經濟學相關的理論與應用。Macroeconomic perspective: understanding of macroeconomic theories and relevant application	
Е	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	0

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	Python Basics I	
3	Python Basics II	

4	Statistical learning, ISLP, Ch. 2					
5	Linear regression, ISLP, Ch. 3					
6	Classification, ISLP, Ch. 4					
7	Resampling methods, ISLP, Ch. 5					
8	No Class					
9	Midterm exam					
10	Linear model selection and regularization, ISLP, Ch. 6					
11	Moving beyond linearity, ISLP, Ch. 7					
12	Tree-based methods, ISLP, Ch. 8					
13	Support vector machine, ISLP, Ch. 9					
14	Deep learning, ISLP, Ch. 10					
15	Unsupervised learning, ISLP, Ch. 12					
16	Multiple testing, ISLP, Ch. 13					
17	No class, holiday					
18	18 Final exam and 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Mi	scellaneous:					
	教學創新自評 Teaching Self-Evaluation					
創新教學(	Innovative Teaching)					
問題導	向學習(PBL)                                   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						
一 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	多元評量方式 Assessments								
Items	配分比例 Percentage	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	15%								
期末考成績 Final Exam	15%								
作業成績 Homework and/or Assignments	20%		<b>~</b>						
其他 Miscellaneous (Project)	30%		~		~				

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 (ISLP), James, Witten, Hastie and Tibshirani, 2023.

#### 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.)

其他補充說明(Supplemental instructions)