


**國立東華大學**  
**教學計劃表 Syllabus**

課程名稱(中文) Course Name in Chinese	機器學習			學年/學期 Academic Year/Semester	109/2
課程名稱(英文) Course Name in English	machine learning				
科目代碼 Course Code	EC__50440	系級 Department & Year	碩士	開課單位 Course-Offering Department	經濟學系
修別 Type	選修 Elective	學分數/時間 Credit(s)/Hour(s)		3.0/3.0	
授課教師 Instructor	/李同龢				
先修課程 Prerequisite					
課程描述 Course Description					
This class intends to introduce students for basic techniques in machine learning using Python. This class will familiarize students with a broad cross-section of models and algorithms for machine learning, and prepare students for research or industry application of machine learning techniques.					
課程目標 Course Objectives					
1、學習如何利用監督式學習（參數和非參數算法、支持向量模型及神經網絡）從事分析。 2、學習如何非監督式學習（集群、降維、推薦系統和深度學習）從事分析。 3、學習如何利用實際資料建立分析能力。					
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：通曉經濟學的進階理論技巧，應用數學與賽局解決經濟議題的能力。 Mathematical analysis skills: Mastering in intermediate application of mathematical theories and game theory in analyzing economic issues.				●
B	實證經濟分析能力：通曉經濟學的進階實證技巧，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 intermediate application of statistics and econometrics in data collection and examination				●
C	微觀經濟之闡釋能力：通曉進階個體經濟學相關的理論與應用。 Microeconomic perspective: Thorough understanding of intermediate microeconomic theories and relevant application				○
D	宏觀經濟之闡釋能力：通曉進階總體經濟學相關的理論與應用。 Macroeconomic perspective: Thorough understanding of intermediate macroeconomic theories and relevant application				○
E	樂活能力：具備適應現代社會的進階學養以及就業能力。 Employment opportunities: Capabilities of intermediate 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進階專業研究報告。 Communication skills: Having a clear mind and capability in writing an intermediate professional academic report				
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	No class, holiday	
3	Simple ML classification algorithms	
4	Scikit-learn for ML classification	
5	Data processing for training sets	
6	Dimensionality reduction	
7	No class, holiday	
8	Model evaluation and hyperparameter tuning	
9	Midterm project presentation, Ensemble learning	
10	Sentiment analysis	
11	Web application	
12	Regression	
13	Clustering analysis	
14	Artificial neural network and TensorFlow	
15	Deep convolutional neural networks	
16	Recurrent neural networks	
17	No class, holiday	
18	Final 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:

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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									
期中考成績 Midterm Exam	35%		✓						
期末考成績 Final Exam	35%		✓						
作業成績 Homework and/or Assignments	30%		✓						
其他 Miscellaneous (_____)									
<p style="text-align: center;">評量方式補充說明 Grading &amp; Assessments Supplemental instructions</p> <p>Class etiquette: Experience indicates that students with regular attendance of class have higher grades than those who did not. Followings are basic class etiquette. Turn off your mobile phone before class. No iPad, smart phone and laptop computer are allowed to use during lecture, unless with permission from me. No loud chatting allowed in the class. Having food or drink in the class is not encouraged. No video or audio recording is not allowed. Picture taking by any electronic devices is forbidden as well. Any irrational behavior in the class will not be tolerated. Any violation of the class etiquette will be penalized by reduction in your grade.</p> <p>Three strikes, you' re out: If you missed three classes without any official excuses, your semester grade will be D or below D. You need an official document for not attending class. No oral or email excuses will be accepted. Therefore, please do not email me that you could not come to class, just give me the official document.</p>									
<p style="text-align: center;">教科書與參考書目 (書名、作者、書局、代理商、說明) Textbook &amp; Other References (Title, Author, Publisher, Agents, Remarks, etc.)</p> <p>Introduction to Statistical Learning with applications in R (ISLR), James, Witten, Hastie and Tibshirani, 8th printing</p>									
<p style="text-align: center;">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 &amp; Teacher's Website(Including online teaching information. Personal website can be listed here.)</p>									
<p style="text-align: center;">其他補充說明 (Supplemental instructions)</p>									