



教學計畫表 Syllabus

課程名稱(中文) Course Name in Chinese	機器學習導論			學年/學期 Academic Year/Semester	112/2
課程名稱(英文) Course Name in English	Introduction to machine learning			授課教師 Instructor	Wen-Chieh Fang
科目代碼 Course Code	CSIE35410/ CSIEB0300	系級 Department & Year	大學部 3 年級	開課單位 Course-Offering Department	CSIE
修別 Type	☐ 必修 Required ☒ 選修 Elective ☐ 學程 Program	學分數/時數 Credit(s)/ Hour(s)		3/3	
先修課程 Prerequisite	None				
課程描述 Course Description	This course gives an overview of many basic concepts, techniques, and algorithms in traditional machine learning and deep learning, such as classification, regression, feature engineering, and neural networks. Students will be given homework and programming assignments to learn the related coding techniques. Mid-term and final exams are used for learning evaluation.				

課程目標 Course Objectives	- This course will give an overview of many basic concepts, techniques, and algorithms in machine learning. - The course will give the student the ideas and intuition behind modern machine learning methods. - The course might also introduce some applications of machine learning, such as image classification, data generation, and text data processing.				
系專業能力 Basic Learning Outcomes	A. 統合資工知識技術之能力 Ability to integrate knowledge and technologies of computer science and information engineering. B. 設計技術理論驗證實驗之能力 Ability to design and conduct science experiments and to validate hypotheses. C. 資訊軟硬體設計開發之能力 Ability to design and develop computer software and hardware. D. 團隊專案開發之能力 Ability to design and develop team projects. E. 批判性思考與創新研發之能力 Ability of analytical thinking, creative research planning, and innovative development.				
課程目標與系專業能力相關性 Correlation between Course Objectives and Basic Learning Outcomes	A	B	C	D	E
	●	○	●	○	○
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	Course introduction																																																													
2	No classes	Peace Memorial Day																																																												
3	Introduction to machine learning																																																													
4	Basic techniques for machine learning																																																													
5	Feature engineering																																																													
6	Feature engineering																																																													
7	Classification																																																													
8	Regression																																																													
9	期中考試週 Midterm Exam																																																													
10	Clustering																																																													
11	Machine learning algorithms																																																													
12	Combining multiple learners																																																													
13	Design and analysis of ML experiments																																																													
14	Neural networks																																																													
15	Deep learning introduction																																																													
16	Deep learning models and applications																																																													
17	期末考試週 Final Exam																																																													
18	Alternative curriculum																																																													
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: _____																																																													
學期成績 計算及多元 評量方式 Grading& assessme- nts	<table><tr><th rowspan="2">配分項目 Items</th><th rowspan="2">配分比例 Percentage</th><th colspan="8">多元評量方式 assessments</th></tr><tr><th>測驗 /會 考</th><th>實作 /觀 察</th><th>口頭 發表</th><th>專題 研究</th><th>創作 展演</th><th>卷宗 評量</th><th>證照 檢定</th><th>其他</th></tr><tr><td>期中考成績 Midterm Exam</td><td>30%</td><td>V</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>期末考成績 Final Exam</td><td>30%</td><td>V</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>作業成績 Homework and/or Assignments</td><td>40%</td><td></td><td>V</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>											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	期中考成績 Midterm Exam	30%	V									期末考成績 Final Exam	30%	V									作業成績 Homework and/or Assignments	40%		V							
	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																																																				
	期中考成績 Midterm Exam	30%	V																																																											
	期末考成績 Final Exam	30%	V																																																											
作業成績 Homework and/or Assignments	40%		V																																																											
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.) ● Andriy Burkov, “The Hundred-Page Machine Learning Book,” 2019. ● Simon Rogers and Mark Girolami, “A First Course in Machine Learning,” second edition, Chapman and Hall/CRC, 2020. ● Ethem Alpaydin, “Introduction to machine learning,” fourth edition, The MIT Press, 2020 ● Pablo Duboue, The Art of Feature Engineering: Essentials for Machine Learning, Cambridge University Press, 2020 ● Alice Zheng and Amanda Casari, “Feature Engineering for Machine Learning: Principles and Techniques for Data Scientists,” O’Reilly Media, Inc., 2018																																																														
課程教材網址 (教師個人網址請列在本校內之網址) Teaching Aids & Teacher's Website (Personal website can be listed here.) 東華 e 學苑																																																														