



教學計畫表 Syllabus

課程名稱(中文) Course Name in Chinese	大數據分析導論			學年/學期 Academic Year/Semester	112/2
課程名稱(英文) Course Name in English	Introduction to big data analysis			授課教師 Instructor	Wen-Chieh Fang
科目代碼 Course Code	CSIE35420/ CSIEB0510	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 will let students gain basic knowledge on analyzing big data. It will introduce undergraduate students who are expecting to face big data storage, processing, analysis, visualization, and application issues. This course will introduce the tools and techniques for big data analysis. This course will let students get hands-on experience on big data analytics through homework.				

課程目標 Course Objectives	- This course will give students an overview of many basic concepts, techniques, and algorithms for big data analysis. - This course will introduce some common tools and techniques for big data analysis. - The course will give the student practical experiences on using big data framework and tools.				
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	Big data overview										
3	Big data analytics										
4	Big data visualization										
5	Map and parallel computing										
6	Function pipelines										
7	No classes										Spring Break
8	Lazy workflows										
9	期 中 考 試 週 Midterm Exam										
10	Introduction to Hadoop part 1										
11	Introduction to Hadoop part 2										
12	Introduction to Hadoop part 3										
13	Introduction to Spark part 1										
14	Introduction to Spark part 2										
15	Introduction to Spark part 3										
16	Introduction to Dask										
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: <u>In-class exercise</u>										
學 期 成 績 計 算 及 多 元 評 量 方 式 Grading& assessme- nts	配分項目 Items		配分比例 Percentag e	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.) ● Balamurugan Balusamy, Nandhini Abirami. R, Seifedine Kadry, and Amir H. Gandomi, "Big Data Concepts, Technology, and Architecture," John Wiley & Sons, Inc., 2021 ● John T. Wolohan, "Mastering Large Datasets with Python: Parallelize and Distribute Your Python Code," Manning Publications Co., 2019. ● Ivan Marin , Ankit Shukla , Sarang VK, "Big Data Analysis with Python: Combine Spark and Python to Unlock the Powers of Parallel Computing and Machine Learning," Packt Publishing, 2019. ● Avinash Navlani, Armando Fandango, and Ivan Idris, "Python Data Analysis: Perform Data Collection Data Processing, Wrangling, Visualization, And Model Building Using Python," third edition, Pack Publishing, 2021.											
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											