國立東華大學

課　　綱　Course Outline

資訊工程學系人工智慧與創新應用碩士班

中文課程名稱 Course Name in Chinese	大數據系統				
英文課程名稱 Course Name in English	Big Data Systems				
科目代碼 Course Code	AIIA50050	班 別 Degree	碩士班 Master’s		
修別 Type	選修 Elective	學分數 Credit(s)	3.0	時 數 Hour(s)	3.0
先修課程 Prerequisite					

課程目標
Course Objectives

大數據處理在當前資訊爆炸的時代，已成為必備技能。特別是席捲全世界的人工智慧與機器學習浪潮，都必須仰賴對大數據的解析、分類、辨識和歸納。本課程探討大數據特性，讓同學了解大數據處理尖端技術發展脈絡，深入探索各種大數據系統和工具的運作原理和應用實例，培育同學們具備未來將大數據處理技術應用在任何領域所需的理論知識和實務技能。
In the age of information explosion, big data processing is already a must-have skill. Especially on the new waves of AI and machine learning, all systems rely heavily on big data analysis, classification, recognition and induction. The purposes of this course are to study big data characteristics, to understand the evolution of big data processing technologies, and to explore the underlying principles and real-world applications of big data systems/tools. Students will learn the theoretical knowledge and practical skills necessary for applying big data technologies on any future application domains.

系教育目標
Dept.’s Education Objectives

1	探究學科知識，善用專業技能 Explore academic knowledge, utilize professional skills.
2	訓練評析思考，創新解決問題 Exercise analytical thinking, enhance creative problem solving skills.
3	學習團隊分工，強化溝通表達 Participate in teamwork, strengthen communication skills.

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	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.	●

圖示說明Illustration ：● 高度相關 Highly correlated ○中度相關 Moderately correlated

課程大綱
Course Outline

1.大數據概論(Introduction: What/Why/Where of big data, challenges and opportunities.)
2.通用大數據處理平台(General purpose big data platforms)
3.大數據儲存架構與系統(Big data storage architecture and systems)
4.文字與數字大數據處理系統與工具(Systems and tools for textual and numerical big data)
5.多媒體大數據處理系統與工具(Systems and tools for multimedia big data)
6.圖形大數據處理系統與工具(Systems and tools for big graph processing)
7.串流大數據處理系統與工具(Systems and tools for streaming big data)
8.大數據處理管線框架(Big data pipelining frameworks)
9.大數據ETL工具(Big data ETL tools)
10.物聯網大數據平台(IoT big data platforms)
11.大數據分析簡介、其他系統與未來趨勢(Big data analytics, other systems and trends)

資源需求評估（師資專長之聘任、儀器設備的配合・・・等）
Resources Required (e.g. qualifications and expertise, instrument and equipment, etc.)

需搭配電腦教室和一般教室使用
Need to use both traditional classroom and computer lab.

課程要求和教學方式之建議
Course Requirements and Suggested Teaching Methods

具備程式設計、檔案系統、資料庫系統、基本網路和作業系統知識會很有幫助。
Backgrounds in programming, file systems, database systems, networking and operating systems are highly desirable.

其他
Miscellaneous