國立東華大學

課　　綱　Course Outline

資訊管理學系一般組

中文課程名稱 Course Name in Chinese	機器學習				
英文課程名稱 Course Name in English	Machine learning				
科目代碼 Course Code	IM__50280	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

The course aims to equip students with a solid foundational knowledge of machine learning concepts, algorithms, and their real-world applications, enabling the students to comprehend the principles of supervised and unsupervised learning, perform data preprocessing, evaluate model performance, and lay the groundwork for pursuing advanced studies or practical implementation in fields where machine learning plays a pivotal role. Through hands-on projects and case studies, they will gain practical experience applying machine learning to real-world problems.

系教育目標
Dept.’s Education Objectives

1	培育具備資訊技術解決問題思維能力之高級人才 Cultivate senior personnel with the capability of information technology to solve problems with thinking skills
2	以資訊技術為核心，培育具有高度專業能力之技術人才 Cultivate professional personnel with the capability of information technology
3	以管理為對象，培育具有創新、研發、企劃整合能力之高級人才 Cultivate senior personnel with the capability of innovation, research and development and integrated planning
4	提供數位內容、電子商務與知識管理所需之人才 Cultivate personnel with the capability of digital content, electronic commerce and knowledge management
5	培育符合國家與區域發展所需之資訊管理人才 Cultivate information management personnel to meet the needs of national and regional development

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	培育具備創造與思考能力、服務精神、團隊合作以及國際觀 Nurture ability regarding creativity and thinking, spirit of service, teamwork and international view	○
B	培養具備資訊專業知識與技能 Nurture professional ability and skill regarding information	●
C	培養具備資訊科技與管理領域之知識整合應用能力 Nurture integrated ability regarding information technology and management	●
D	培養具備解決問題之資訊剖析、組織、整合、應用以及表達的能力 Nurture ability of information analysis, organization, integration, application, and expression regarding problem solving	○
E	培養具備獨立研究、領導智能與資訊創新的能力 Nurture ability regarding independent research, leadership and information innovation	●

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

課程大綱
Course Outline

1.Introduction to machine learning
2.Linear regression and classification
3.Logistics regression
4.Decision trees and random forest
5.Multi-class classification
6.Probabilistic classifier
7.Support vector machine
8.Clustering
9.Dimensionality reduction
10.Feedforward neural networks
11.Convolutional neural networks
12.Recurrent neural networks
13.Transfer learning

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.)

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

Lecture, study case, paper reading, and presentation.

其他
Miscellaneous