



課 綱 Course Outline  
資訊工程學系國際組

中文課程名稱 Course Name in Chinese	前瞻機器學習原理與技術				
英文課程名稱 Course Name in English	Advanced Machine Learning Principles and Technology				
科目代碼 Course Code	CSIEM0620	班 別 Degree	學士班 Bachelor' s		
修別 Type	學程 Program	學分數 Credit(s)	3.0	時 數 Hour(s)	3.0
先修課程 Prerequisite					
課程目標 Course Objectives					
<p>1. 本課程將介紹社群網路分析和推薦系統的重要概念，包括社群網路的屬性、圖論、推薦演算法和評估工具。This course will introduce important concepts of social networks analysis and recommender systems, including properties of social networks, graph theory, recommendation algorithms, and evaluation tools.</p> <p>2. 本課程旨在幫助學生了解如何透過程式實作分析社群網路與推薦系統。This course aims to help students understand how to analyze social networks and recommender systems through programming.</p> <p>3. 本課程將回顧了該領域的當前研究。This course will review current research in the field.</p>					
系教育目標 Dept.' s Education Objectives					
1	具備學科知識，養成專業技能 Acquire academic knowledge, develop professional skills				
2	學習創新思考，分析解決問題 Inspire innovative thinking, increase analytical problem solving ability				
3	培養團隊精神，學習溝通合作 Promote teamwork spirit, encourage coordination and cooperation				
4	提昇專業倫理，承擔社會責任 Sublimate professional ethics, engage social responsibility				
5	涵育人文素養，開拓國際視野 Cultivate humanities, broaden global perspectives				

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	資訊專業終身學習能力 Ability of lifetime learning in information profession	○
B	實驗驗證資訊科學能力 Ability of validate experimental result validation in information science field	●
C	資訊工具整合運用能力 Ability of integrated applications of information technology	●
D	資訊系統應用設計開發能力 Ability of information application system design and development	●
E	團隊合作溝通協調能力 Ability of teamwork, communication, and coordination	○
F	資通訊科技問題解決能力 Ability of problem solving regarding information and communication technology	○
G	瞭解資訊科技多元影響能力 Ability to understand information technology's multiple influences	
H	肩負資訊人社會責任能力 Ability of bearing the social responsibilities being among information professionals	

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

### 課程大綱 Course Outline

1. 課程介紹 Course introduction
2. 圖形思維 Graph thinking
3. 圖形資料工程 Graph data engineering
4. 圖形機器學習 Graph Machine Learning
5. 社群網路圖 Social Network Graphs
6. 推薦系統 Recommender systems
7. 內容推薦系統 Content-based recommendation
8. 協同過濾 Collaborative filtering
9. 混合推薦 Hybrid recommendations
10. 推薦系統的解釋與評估 Explanations and evaluations in recommender systems

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.)

師資以具備社群網路與推薦系統教學研究經驗為佳。 Teachers with social networks and recommender systems teaching and research experience are preferred.

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

學生最好有 Python 程式經驗。課程以面授為主。 Students preferably have experience with Python programming. Courses are taught face-to-face.

其他

Miscellaneous