



## 課 綱 Course Outline

### 理工學院大數據科學國際學士班學士班

中文課程名稱 Course Name in Chinese	演算法				
英文課程名稱 Course Name in English	Algorithm Design and Analysis				
科目代碼 Course Code	DS_10130	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

Practice the design and analysis of algorithms to understand how various algorithms are made

#### 系教育目標 Dept.'s Education Objectives

1	訓練嚴謹思考與推理能力。 to provide a solid training in rigorous thinking and reasoning,
2	奠定資料科學理論與應用數學的基礎知識。 to establish well-founded background knowledge in data science and applied mathematics,
3	具備跨領域學習能力。 to prepare the students for interdisciplinary study in the future.

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
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A	具備基本資料科學知識及邏輯推理能力。 have well-founded background in data science and logical reasoning,	●
B	具備機率、統計、資料科學及相關領域的知識與應用能力。 have the knowledge of probability, statistics, data science and the related fields, and their applications,	●
C	具備資料科學應用技能與團隊合作，解決問題能力。 be able to utilize data scientific skills for problem solving through cooperation and teamworking.	○

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

課程大綱  
Course Outline

1. Notation and Analysis of Algorithms
2. Divide-and-Conquer Algorithms
3. Dynamic Programming Algorithms
4. Greedy Algorithms
5. Backtracking Algorithms
6. Branch-and-Bound Algorithms
7. The Sorting Problem
8. The Searching Problem
9. The Hard Problem

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.)

Existing suitable full-time teachers

課程要求和教學方式之建議

Course Requirements and Suggested Teaching Methods

Class lectures and homework exercises

其他

Miscellaneous

1130306訂定