

## 110-114學年度系所課程地圖 Department Curriculum Map for Academic years 110-114

### 系所概要 Department

系所名稱 Department Name	資料科學與資訊計算研究所 Graduate Institute of Data Science and Information Computing
班別 Division	碩士班 Master

### 教育目標 Education Goals

編號 Number	項目內容 Content
1	培養學生使具有初步的整合能力，能分析問題並架構數學模型與計算方法。
1	To develop students' ability to analyze problems and formulate mathematical models and calculations with initial integration skills.
2	具備理論證明能力，能撰寫各種電腦程式語言。
2	Demonstrated ability to demonstrate theories and write a variety of computer programming languages.
3	成為數學分析、計算科學或大數據分析之研究或實務專才。
3	Become a research or practical expert in mathematical analysis, computational science or big data analysis.

### 學生核心能力 Student Core Competencies

編號 Number	項目內容 Content	對應教育目標編號 Corresponding Education Goal Number
A	數學專業思維與邏輯推理知識	123
A	Mathematical Thinking and Logic	123
B	數學分析專業知識	123
B	Professional Knowledge in Mathematical Analysis	123
C	計算科學專業知識	123
C	Professional Knowledge in Scientific Computation	123
D	數學與力學之理論解析	123
D	Theory of Mathematical Analysis and Mechanics	123
E	數學模型建構與軟體應用	123
E	Mathematical Modeling and Software Application	123

承辦人簽章 Signature of Responsible Person :

規劃單位主管簽章 Head of Planning Division :

Date : 115.1.13 - 1 -

**110-114學年度系所課程地圖**  
**Department Curriculum Map for Academic years 110-114**

**系所概要 Department**

系所名稱 Department Name	資料科學與資訊計算研究所 Graduate Institute of Data Science and Information Computing
班別 Division	碩士班 Master

**學生核心能力 Student Core Competencies**

編號 Number	項目內容 Content	對應教育目標編號 Corresponding Education Goal Number
F	計算與模擬研究	123
F	Research in Computation and Simulation	123
G	外文文獻研討	3
G	Literature Review	3

※附註 Note :

- 1.各系所所屬之班別，含學士班、碩士班、博士班等，請分別填寫。  
 1.Complete the map separately for each division, including Bachelor's, Master's, and Doctoral program.

例如：資管學士班需填寫表二及表三；資管碩士班也須填寫表二及表三。  
 For example, Forms 2 and 3 must be completed for Bachelor's program in Management Information Systems, and also for Master's program in for Bachelor's program in Management Information Systems.

- 2.教育目標及核心能力之代號皆以英文字母大寫為主。  
 2.Codes for Education Goals and Core Competencies must be in uppercase English alphabet letters.
- 3.可依不同班（組）別填寫教育目標及核心能力。  
 3.Education Goals and Core Competencies can be specific to the division in question.

承辦人簽章 Signature of Responsible Person :

規劃單位主管簽章 Head of Planning Division :

Date : 115.1.13 - 2 -

資料科學與資訊計算研究所 Graduate Institute of Data Science and Information Computing  
 學士班 Bachelor's Program  碩士班 Master's Program  博士班 Doctoral Program  
 碩專班 Master's Degree Program  國際專班 International Program  進修學士班 Bachelor Part-Time Program  
**課程規畫表 Curriculum Plan**

中文課程名稱 Course Title in Chinese	英文課程名稱 Course Title in English	規劃要點 (附註) Plans (Notes)				對應核心能 力編號 Correspond ing Education Goal	建議修 課年級 Reco mme ded Cours	開課單位 Course Offering Unit	備註 Remarks
		1	2	3	4				
<b>必修課程 Required Courses</b>									
碩士論文	Thesis	M	C	Y	6	A20B20C20D20E20	2	資料所 Graduate Institute of Data Science and Information Computing	
專題演講 (一)	Seminar(I)	M	C	Y	0	A20B20C20D20E20	1	資料所 Graduate Institute of Data Science and Information Computing	

- 1 : U-學士課程、M-碩士課程、D-博士課程。 1: U-Bachelor's program, M-Master's program, D-Doctoral program.  
 2 : A-正課、B-實習課、C-台下指導之科目如學生講述或邀請演講之專題討論、專題研究.....等。  
 2 : A-Lecture, B-Internship, C-Subjects with private guidance such as student presentations or invited speeches, topic discussions, topic research, etc.  
 3 : S-學期課、Y-學年課。 3: S-Semester course, Y-Year-long course.  
 4 : 科目 (全期或全年) 總學分數 (請填阿拉伯數字)。 4: Total course (full-semester or full-year) credits (in Arabic numerals).

承辦人簽章 Signature of Responsible Person :

規劃單位主管簽章 Head of Planning Division :

Date : 115.1.13 - 3 -

資料科學與資訊計算研究所 Graduate Institute of Data Science and Information Computing  
 學士班 Bachelor's Program  碩士班 Master's Program  博士班 Doctoral Program  
 碩專班 Master's Degree Program  國際專班 International Program  進修學士班 Bachelor Part-Time  
 Program  
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		1	2	3	4				
<b>選修課程 Elective Courses</b>									
專題演講 (二)	Seminar(II)	M	C	Y	0	A20B20C20D20E20	2	資料所 Graduate Institute of Data Science and Information Computing	
資料計算文獻研討 (一)	Review of Literature in Data Computational Science (I)	M	C	S	1	A50E50	2	資料所 Graduate Institute of Data Science and Information Computing	
資料計算文獻研討 (二)	Review of Literature in Data Computational Science (II)	M	C	S	1	A50E50	2	資料所 Graduate Institute of Data Science and Information Computing	
資料計算書報討論 (一)	Seminar on Computational Science(I)	M	C	S	1	A50D50	1	資料所 Graduate Institute of Data Science and Information Computing	
資料計算書報討論 (二)	Seminar on Computational Science(II)	M	C	S	1	D50G50	1	資料所 Graduate Institute of Data Science and Information Computing	
專題討論	Seminar on Selected Topics	M	C	Y	2	A20B20C20D20E20	1	資料所 Graduate Institute of Data Science and Information Computing	
專題研究	Special Topics	M	C	Y	4	A20B20C20D20E20	1	資料所 Graduate Institute of Data Science and Information Computing	
計算物理	Computational Physics	M	A	S	3	A40D30G30	天4以上 Senior and above	資料所 Graduate Institute of Data Science and Information Computing	進階課程 advanced courses
計算科學	Computational Science	M	A	S	3	D100	天4以上 Senior and above	資料所 Graduate Institute of Data Science and Information Computing	進階課程 advanced courses
計算數學	Computational Mathematics	M	A	S	3	A50D50	天4以上 Senior and above	資料所 Graduate Institute of Data Science and Information Computing	進階課程 advanced courses
雲端運算虛擬化技術	Virtualization Technology for Cloud Computing	M	A	S	3	E100	1	資料所 Graduate Institute of Data Science and Information Computing	
雲端運算與行動平台	Cloud Computing and Mobile Platforms	M	A	S	3	E100	1	資料所 Graduate Institute of Data Science and Information Computing	
數據科學方法	Fundamental Methodology for Data Science	M	A	S	3	C30E30F40	天4以上 Senior and above	資料所 Graduate Institute of Data Science and Information Computing	進階課程 advanced courses
數學影像處理	Mathematical Image Processing	M	A	S	3	B30C30E40	天4以上 Senior and above	資料所 Graduate Institute of Data Science and Information Computing	進階課程 advanced courses
數學建模與數據分析	Mathematical Modeling and Data Analysis	M	A	S	3	C100	天4以上 Senior and above	資料所 Graduate Institute of Data Science and Information Computing	進階課程 advanced courses
深度學習	Deep Learning	M	A	S	3	A50C50	天4以上 Senior and above	資料所 Graduate Institute of Data Science and Information Computing	進階課程 advanced courses
數據挖掘與視覺化	Data Mining and Visualization	M	A	S	3	A40B30C30	1	資料所 Graduate Institute of Data Science and Information Computing	
迴歸分析	Regression Analysis	M	A	S	3	A25B25C25E25	1	資料所 Graduate Institute of Data Science and Information Computing	
財務時間序列分析	Financial Time Series Analysis	M	A	S	3	A25B25C25E25	1	資料所 Graduate Institute of Data Science and Information Computing	
機器學習	Machine Learning	M	A	S	3	A30C40F30	1	資料所 Graduate Institute of Data Science and Information Computing	
數值最佳化	Numerical Optimization	M	A	S	3	B40E30F30	天4以上 Senior and above	資料所 Graduate Institute of Data Science and Information Computing	進階課程 advanced courses
結構化機器學習模型及其應用	Structural Machine Learning Models and Their Applications	M	A	S	3	A30C40F30	1	資料所 Graduate Institute of Data Science and Information Computing	
資訊程式原理	Principles of Informatic Programming	M	A	S	2	A30C40F30	1	資料所 Graduate Institute of Data Science and Information Computing	
數據挖掘與視覺化(一)	Data Mining and Visualization(I)	M	A	S	1	A40B30C30	1	資料所 Graduate Institute of Data Science and Information Computing	
數據挖掘與視覺化(二)	Data Mining and Visualization(II)	M	A	S	1	A40B30C30	1	資料所 Graduate Institute of Data Science and Information Computing	
數據挖掘與視覺化(三)	Data Mining and Visualization(III)	M	A	S	1	A40B30C30	1	資料所 Graduate Institute of Data Science and Information Computing	
視覺辨識理論、實作與應用	Visual Recognition: From Theory and Implementation to Applications	M	A	S	3	C100	1	資料所 Graduate Institute of Data Science and Information Computing	
SAP實務學習與數據分析	SAP Experiential Learning and Data Analysis	M	A	S	2	C20E30F30G20	天4以上 Senior and above	資料所 Graduate Institute of Data Science and Information Computing	進階課程 advanced courses
前瞻資料科學(一)	Advanced Data Science (I)	M	A	S	1	A80D20	1	資料所 Graduate Institute of Data Science and Information Computing	

承辦人簽章 Signature of Responsible Person :

Date : 115.1.13 - 4 -

規劃單位主管簽章 Head of Planning Division :

資料科學與資訊計算研究所 Graduate Institute of Data Science and Information Computing  
 學士班 Bachelor's Program  碩士班 Master's Program  博士班 Doctoral Program  
 碩專班 Master's Degree Program  國際專班 International Program  進修學士班 Bachelor Part-Time  
 Program  
**課程規畫表 Curriculum Plan**

中文課程名稱 Course Title in Chinese	英文課程名稱 Course Title in English	規劃要點 (附註) Plans (Notes)				對應核心能力編號 Corresponding Education Goal Number	建議修課年級 Recommended Course Division	開課單位 Course Offering Unit	備註 Remarks
		1	2	3	4				
<b>選修課程 Elective Courses</b>									
前瞻資料科學(二)	Advanced Data Science (II)	M	A	S	1	A80D20	1	資料所 Graduate Institute of Data Science and Information Computing	
前瞻資料科學(三)	Advanced Data Science (III)	M	A	S	1	A80D20	1	資料所 Graduate Institute of Data Science and Information Computing	
高等數值方法 (一)	Advanced Numerical Methods (I)	M	A	S	3	A40B30D30	1	資料所 Graduate Institute of Data Science and Information Computing	
數據分析數學	Mathematical Analysis to Data Science	M	A	S	3	A20B20C20E20F20	1	資料所 Graduate Institute of Data Science and Information Computing	
資料庫系統設計	Database System	M	A	S	3	C50F50	大4以上 Senior and above	資料所 Graduate Institute of Data Science and Information Computing	進階課程 advanced courses
區塊鏈與虛擬貨幣	Blockchain and Virtual Currency	M	A	S	3	A50E50	1	資料所 Graduate Institute of Data Science and Information Computing	
量子資訊安全入門	Introduction to Quantum Cybersecurity	M	A	S	3	A60E40	大4以上 Senior and above	資料所 Graduate Institute of Data Science and Information Computing	進階課程 advanced courses
網路安全	Network Security	M	A	S	3	A50E50	1	資料所 Graduate Institute of Data Science and Information Computing	
科技產業校外實習	Internship in Technology Industry	M	B	S	3	A20B20C20E20F20	大4以上 Senior and above	資料所 Graduate Institute of Data Science and Information Computing	進階課程 advanced courses
醫療影像實務專題	Medical Imaging in Practice	M	A	S	3	C25D25E25F25	大4以上 Senior and above	資料所 Graduate Institute of Data Science and Information Computing	進階課程 advanced courses
大數據結構化程式設計	Big Data Structured Programming	M	A	S	3	A20B20C20E20F20	大4以上 Senior and above	資料所 Graduate Institute of Data Science and Information Computing	進階課程 advanced courses
人工智慧應用在教育數據	Fundamentals for AI Applications in Educational Data	M	A	S	3	A20B20C20E20F20	大4以上 Senior and above	資料所 Graduate Institute of Data Science and Information Computing	進階課程 advanced courses
人工智慧在適性化學習應用	Artificial Intelligence in Adaptive Learning	M	A	S	3	A20B20C20E20F20	大4以上 Senior and above	資料所 Graduate Institute of Data Science and Information Computing	進階課程 advanced courses
數據科學在教育數據分析理論與應用	Theory and Application of Data Science for Educational Data	M	A	S	3	C50F50	大4以上 Senior and above	資料所 Graduate Institute of Data Science and Information Computing	進階課程 advanced courses
教育大數據專題	Special Course for Big Data on Education	M	C	S	3	A50G50	大4以上 Senior and above	資料所 Graduate Institute of Data Science and Information Computing	進階課程 advanced courses
統計數據科學與機器學習	Statistical Data Science and Machine Learning	M	A	S	3	A25B25C25D25	1	統計所 Graduate Institute of Statistics	

※附註：規劃要點填表說明：(1到4各欄位請填正確代表字母)

Note: Instructions for completing this form are provided below (please provide the correct English alphabet letters in fields 1 to 4)

1: U-學士課程、M-碩士課程、D-博士課程。1: U-Bachelor's program, M-Master's program, D-Doctoral program.

2: A-正課、B-實習課、C-台下指導之科目如學生講述或邀請演講之專題討論、專題研究.....等。

2: A-Lecture, B-Internship, C-Subjects with private guidance such as student presentations or invited speeches, topic discussions, topic research, etc.

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4: 科目(全期或全年)總學分數(請填阿拉伯數字)。4: Total course (full-semester or full-year) credits (in Arabic numerals).

承辦人簽章 Signature of Responsible Person :

規劃單位主管簽章 Head of Planning Division :

Date : 115.1.13 - 5 -