



教學計劃表 Syllabus

課程名稱(中文) Course Name in Chinese	離散數學		學年/學期 Academic Year/Semester	115/1	
課程名稱(英文) Course Name in English	Discrete Mathematics				
科目代碼 Course Code	CSIEB0080	系級 Department & Year	學二	開課單位 Course-Offering Department	資訊工程學系
修別 Type	學程 Program	學分數/時間 Credit(s)/Hour(s)	3.0/3.0		
授課教師 Instructor	/張紘睿				
先修課程 Prerequisite					
課程描述 Course Description					
In this course, we will teach the fundamental mathematical tools used in the computer science, including the basic concepts of logical thinking, relational thinking, recursive thinking and quantitative thinking. We will use examples to illustrate each concept, each tool and each types of proving skills to build the fundamental techniques for handling the advance courses in the future.					
課程目標 Course Objectives					
本課程主要目標以為離散數學課程或是相關課程之基礎。 Provide a foundation for study of discrete mathematics and related courses.					
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					
授課進度表 Teaching Schedule & Content					
週次Week	內容 Subject/Topics				備註Remarks
1	Introduction to Discrete Mathematics				

2	Propositional logic、Truth table、Equivalence、Necessary sufficient and normal forms、Quantifiers、Inference rules	
3	Direct proofs、Proof by contraposition and contradiction	
4	Holiday	
5	Holiday	
6	Sets、Set builder	
7	Introduction to Graph Theory/ Functions/Relations	
8	Recurrence Relations/ Recursive definitions	
9	期中考試週 Midterm Exam	
10	Closed-Form Solutions and Induction	
11	Proof by Induction	
12	Basic Counting Techniques	
13	Selections and Arrangements	
14	Counting with Functions/ Generating Functions	
15	Discrete Probability	
16	Counting Operations in Algorithm	
17	期末考試週 Final Exam	

彈性 教學 規劃 Flexible Teaching Plan	<p>請勾選(至少需勾選1 個項目): Please tick the box(es). (At least one item is required.):</p> <p><input checked="" type="checkbox"/> 問題討論 Problem-based Discussion</p> <p><input checked="" type="checkbox"/> 翻轉教學 Flipped Classroom</p> <p><input type="checkbox"/> 展演實作 Performance / Practical Presentation</p> <p><input type="checkbox"/> 校外參訪Off-campus Visit</p> <p><input type="checkbox"/> 講座活動 Lecture / Seminar</p> <p><input checked="" type="checkbox"/> 線上作業 Online Assignments</p> <p><input checked="" type="checkbox"/> 自主學習 Self-directed Learning</p> <p><input type="checkbox"/> 課業輔導Academic Support</p> <p><input type="checkbox"/> 實驗操作 Experiment Operation</p> <p><input type="checkbox"/> 遠距教學(同步) Distance Learning (Synchronous)</p> <p><input type="checkbox"/> 遠距教學(非同步) Distance Learning (Asynchronous)</p> <p><input type="checkbox"/> 其他(請填寫) Others (Please specify.):</p> <p>備註: 本校學期週數自115 學年度起調整為17 週, 為符合1學分18 小時之原則, 請教師規劃安排彈性教學。 Note: From the 115th academic year, the semester will be 17 weeks. Please include flexible teaching activities to meet the required 18 hours per credit.</p>
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教學策略 Teaching Strategies

- 課堂講授 Lecture 分組討論 Group Discussion 參觀實習 Field Trip
 其他 Miscellaneous:

教學創新自評 Teaching Self-Evaluation

創新教學 (Innovative Teaching)

- 問題導向學習 (PBL) 團體合作學習 (TBL) 解決導向學習 (SBL)
 翻轉教室 Flipped Classroom 磨課師 Moocs

社會責任 (Social Responsibility)

- 在地實踐 Community Practice 產學合作 Industry-Academia Cooperation

跨域合作 (Transdisciplinary Projects)

- 跨界教學 Transdisciplinary Teaching 跨院系教學 Inter-collegiate Teaching

- 業師合授 Courses Co-taught with Industry Practitioners

其它 other:

學期成績計算及多元評量方式 Grading & Assessments

配分項目 Items	配分比例 Percentage	多元評量方式 Assessments							
		測驗 會考	實作 觀察	口頭 發表	專題 研究	創作 展演	卷宗 評量	證照 檢定	其他
平時成績(含出缺席) General Performance (Attendance Record)	30%	✓							
期中考成績 Midterm Exam	35%	✓							
期末考成績 Final Exam	35%	✓							
作業成績 Homework and/or Assignments									
其他 Miscellaneous (_____)									

評量方式補充說明

Grading & Assessments Supplemental instructions

In this course, we will have one paper-based midterm (35%) and one paper-based final exam (35%), and few in-class short quiz (30%).

教科書與參考書目 (書名、作者、書局、代理商、說明)

Textbook & Other References (Title, Author, Publisher, Agents, Remarks, etc.)

Essentials of Discrete Mathematics (3 rd /4 th edition, David J. Hunter 2022 , Jones & Bartlett Learning , 開發圖書 kaifabook.com. tw)

Discrete Mathematics and Its Applications (8 ed) by Kenneth H. Rosen 2018 McGraw Hill Education 新月圖書 <https://www.tunghua.com.tw/>

課程教材網址(含線上教學資訊, 教師個人網址請列位於本校內之網址)

Teaching Aids & Teacher's Website(Including online teaching information.

Personal website can be listed here.)

<https://elearn4.ndhu.edu.tw/moodle/>

其他補充說明 (Supplemental instructions)