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②图玄束至大學

教學計劃表 Syllabus

課程名稱(中文) Course Name in Chinese	線性代數			學年/學期 Academic Year/Semester		113/2	
課程名稱(英文) Course Name in English	Linear Algebra						
科目代碼 Course Code	DS10040	系級 Department 學一 & Year		開課單位 Course-Offering Department	大數據科學國際學士班		
修別 Type	學程 Program	學分數/時間 Credit(s)/Hour(s)		3.0/3.0			
授課教師 Instructor	/林信鋒						
先修課程 Prerequisite							

課程描述 Course Description

- 1. Systems of Linear Equations
- 2. Vector Spaces
- 3. Matrix Operations
- 4. Determinants
- 5. Vector Subspaces
- 6. Eigensystems
- 7. Inner-Product Vector Spaces
- 8. Additional Topics

課程目標 Course Objectives

- 1. Understand the basic concepts and principles of linear algebra, including vectors, matrices, and systems of linear equations.
- 2. To master the methods and techniques of matrix operations, including matrix addition, matrix multiplication, and matrix inversion, etc.
- 3. To understand the concept of eigenvalues and eigenvectors of a matrix and their applications in linear algebra.
- 4. Understand the concepts and properties of linear transformations and be able to apply linear transformations to solve problems.
- 5. Learn how to use linear algebra tools to solve real-world problems, such as image processing, machine learning, etc.

Overall, the goal of the Linear Algebra course is to help students develop a deep understanding of linear algebra and learn to use linear algebra tools to solve problems.

	系專業能力	課程目標與系專業能 力相關性 Correlation between
	Basic Learning Outcomes	Course Objectives and Dept.'s Education
		Objectives
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,	•
В	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,	•
С	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.	0
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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	02/17 Syllabus & Chap. 1 Systems of Linear Equations						
2	02/24 Chapter 1.1~ Chap. 1.2						
3	03/03 Chapter 1.2~ Chap. 1.3						
4	03/10 Chapter 2 Vector Spaces~ Chap. 2.2						
5	03/17 Chapter 2.2~ Chap. 2.3						
6	03/24 Chap. 2.4~ Chap. 3.1 Matrices						
7	03/31 Chapter 3.2 Matrix Inverse						
8	04/07 Vacation						
9	04/14 (04/14 ~ 04/18)期中考試週 Midterm Exam (Chap 1 ~ Chap 3)						
10	04/21 Midterm Exam Discussion & Chap. 4.1~ Chapter 4.2						
11	04/28 Chapter 4.2 ~ Chapter 5.1 Column, Row, and Null Spaces						
12	05/05 Chapter 5.2~ Chap. 5.3						
13	05/12 Chapter 6 Eigensystems						
14	05/19 Chapter 7.1 Inner-Product Spaces						
15	05/26 Chapter 7.2 Orthogonality						
16	06/02 Review						
17	06/09 (06/09 ~ 06/13)期末考試週 Final Exam (Chap 4 ~ Chap 7)						
18	06/16 Additional topics						
	教 學 策 略 Teaching Strategies						
✓ 課堂講	授 Lecture	Field Trip					
	教學創新自評 Teaching Self-Evaluation						
創新教學(Innovative Teaching)						
■ 関題導向學習(PBL) ■ ■ 関體合作學習(TBL) ■ 解決導向學習(SBL)							
翻轉教室 Flipped Classroom 磨課師 Moocs							
社會責任(Social Responsibility)						
	踐Community Practice 產學合作 Industy-Academia Cooperati	on					
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 othe	r:						

學期成績計算及多元評量方式 Grading & Assessments									
配分項目	配分比例 Percentage	多元評量方式 Assessments							
Items		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)	10%								Class attendance
期中考成績 Midterm Exam	40%	~							
期末考成績 Final Exam	50%	~							
作業成績 Homework and/or Assignments									
其他 Miscellaneous (Extra Credits)									Class activity

評量方式補充說明

Grading & Assessments Supplemental instructions

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.)

Textbook: Ward Cheney, David Kincaid, Linear Algebra: Theory and Applications, Second Edition, International Version, Jones & Bartlett Learning, 2012, ISBN 978-1-4496-2731-7 開發圖書

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.)

其他補充說明(Supplemental instructions)