國立東華大學

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	114/2
課程名稱(英文) Course Name in English	Linear Algebra				
科目代碼 Course Code	CSIEB0060	系級 Department & Year	學一	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	/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 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	02/25 Syllabus & Chap. 1 Systems of Linear Equations	
2	03/04 Chapter 1.1~ Chap. 1.2	
3	03/11 Chapter 1.2~ Chap. 1.3	
4	03/18 Chapter 2 Vector Spaces~ Chap. 2.2	
5	03/25 Chapter 2.2~ Chap. 2.3	
6	04/01 Chap. 2.4~ Chap. 3.1 Matrices	
7	04/08 Chapter 3.2 Matrix Inverse	
8	04/15 Chap. 4.1~ Chapter 4.2	
9	04/22 (04/20 ~ 04/24) 期中考試週 Midterm Exam (Chap 1 ~ Chap 3)	
10	04/29 Midterm Exam Discussion & Chapter 4.2	
11	05/06 Chapter 5.1 Column, Row, and Null Spaces	
12	05/13 Chapter 5.2~ Chap. 5.3	
13	05/20 Chapter 6 Eigensystems	
14	05/27 Chapter 7.1 Inner-Product Spaces	
15	06/03 Chapter 7.2 Orthogonality	
16	06/10 Review	
17	06/17 (06/15 ~ 06/19) 期末考試週 Final Exam (Chap 4 ~ Chap 7)	
18	06/24 (06/22 ~ 06/26) Supplement	

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 Industy-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)	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 (_____)									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)