

國立中正大學企業管理學系學士班教學大綱

114 學年度第 2 學期 (Class B, Spring 2026)

科目編號：5201007 (Class B)

科目名稱：線性代數

英文譯名：Linear Algebra

修別/學分數：必修/3

Office hour: 9:10-10:00 Wed. and Fri. (or by appointment)

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Course Objective [Learning goal: problem solving and logical thinking]

In today's AI-driven era, linear algebra has become even more indispensable: many core ideas behind modern analytics and AI—such as embeddings, dimensionality reduction (PCA/SVD), regression, and large-scale optimization—are fundamentally matrix- and vector-based. The objective of this course is to introduce basic linear algebra concepts and applications, particularly those related to studying operations research/management science (OR/MS), an important course in business analytics. Accordingly, this course emphasizes not only computational techniques but also the key concepts behind solution methods, the assumptions embedded in models, and the managerial implications of results. By the end of the course, students should be able to formulate problems clearly, interpret solutions responsibly, and evaluate AI-assisted outputs critically rather than treating them as a black box. It is intended to be both interesting and informative. Logical thinking will be emphasized.

Textbooks

1. Kolman, B. and D.R. Hill, 2013, Introductory Linear Algebra: An Applied First Course, 8th ed., Hwa Tai Publishing, Taipei, Taiwan.
2. Supplementary materials compiled by the instructor.

Course Outline

Week (Date)	Topic	Text
1 (2/25, 2/27*)	Course description/Introduction to Linear Algebra	Chap 1
2 (3/4, 3/6)	Linear equations and matrices and their applications # Markov chain # Cryptology	Chap 1, 2, 8, 10
3 (3/11, 3/13)		
4 (3/18, 3/20)		
5 (3/25, 3/27)		
6 (4/1, 4/3*)	Determinants	Chap 3
7 (4/8*, 4/10)	Determinants	Chap 3
8 (4/15, 4/17)	Vector in R^n	Chap 3, 4, 10
9 (4/22, 4/24)	4/22 Vector in R^n , 4/24 Midterm Exam ,	Chap 4
10 (4/29, 5/1*)	Vector in R^n	Chap 4, 10
11 (5/6, 5/8)	Vector in R^n and its applications	Chap 4, 5, 10
12 (5/13, 5/15)	Real vector spaces and its applications # Linear independent and linear dependent #Basis #Least squares	Chap 6, 7
13 (5/20, 5/22)		
14 (5/27, 5/29)		
15 (6/3, 6/5)		

16 (6/10, 6/12)	Least squares, Eigenvalue and Eigenvector, 6/12 Final Exam	Chap 7, 8, 11
17 (6/17, 6/19*)	Least squares, Eigenvalue and Eigenvector	Chap 7, 8, 11
18 (6/18, 6/26)	Alternative learning	--

*National holiday

Grading

Learning attitude/Participation	10%
Homework	14% (HW1: group discussion assignment 8%)
Midterm exams (4/24)	32%
Final exam (6/12)	44%

Note: The grading may be adjusted if there is an online exam.

Notes

1. How to learn Linear Algebra effectively:

- **Requesting leave is only for irresistible reasons (e.g., illness or injury).**
 - **Concentrate in class**, take notes industriously, and try to think logically.
 - Study the LA textbook carefully and thoroughly.
 - Learn by doing. Enjoy doing homework and exercises from class.
 - Review the textbook.
 - Ask questions if any.
 - Review your problems carefully when correcting the answers to exercises and exams.
2. **Any dishonesty, or violation of university rules, or absence from exams without valid reasons must result in a fail grade on this course.**
3. Learn by doing. Study hard, play hard. As you sow, so will you reap. No pains, no gains.
4. Learning attitude is everything.
5. The instructor reserves the right to adjust the grades. However, you are guaranteed that your grade will not be adjusted down. **Learning attitude and participation** will be decisive factors.
6. **Please follow the intellectual property instruction and no illegal copy.**
7. A useful way to contact is my e-mail.
8. Other information can be found on the Internet at my website:

