暨南大學 JINAN UNIVERSITY

2025

0701M340
Linear Algebra

Time: December 22, 2025 - January 9, 2026; Mon.-Fri., 8:40am-12:00pm

Office Hours: 2 hours (according to the teaching schedule)

Contact Hours: 60 (50 minutes each)

Credits: 4

Location: Online, Zoom

Instructor: TBA

E-mail: TBA

Course Description

Systems of linear equations, vector spaces and subspaces, bases, linear transformations, determinants, eigenvalues and eigenvectors, diagonalization of symmetric matrices, orthogonality, inner product spaces and quadratic forms, and application.

Prerequisites

Calculus I

Required Textbook(s):

Linear Algebra and Its Applications 6th Edition

Author(s): Lay, David | Lay, Steven | McDonald, Judi

Textbook ISBN-13: 9780135443729

You will need to purchase an access code. The cost of the homework software is $89.99 for a single term access.

Course Goals

Develop an understanding of the theory of systems of linear equations, matrices, determinants, vector spaces, and linear transformations. Develop ability to handle abstract mathematics.

Course Schedule

Please note that this schedule is meant to give an overview of the major concepts of this course. Changes may occur in this calendar as needed to aid in the student's development.

WEEK ONE

Monday: Section 1.1 Systems of Linear Equations
Section 1.2 Row Reductions and Echelon Form
Section 1.3 Vector Equations

Tuesday: Section 1.4 The Matrix Equation
Section 1.5 Solution Sets of Linear Systems
Section 1.6 Applications of Linear Systems

Wednesday: Section 1.7 Linear Independence
Section 1.8 Introduction to Linear Transformations
Section 1.9 The matrix of Linear Transformations

Thursday: Section 2.1 Matrix Operations
Section 2.2 The Inverse of a Matrix
Section 2.3 Characterizations of Invertible Matrix

Friday: Section 2.4 Partitioned Matrix
Section 2.5 Matrix Factorizations
Section 2.8 Subspaces of R^n

WEEK TWO

Monday: Section 2.9 Dimension and Rank

Section 3.1 Introduction to Determinants

Section 3.2 Properties of Determinants

Section 3.3 Cramer's rule, and volume and Linear Transformations spaces

Tuesday: Section 4.1 Vector Spaces and subspaces

Section 4.2 Null Spaces, column spaces and Linear Transformations

Section 4.3 Linear independent sets and bases

Wednesday: Section 4.4 Coordinate Systems

Section 4.5 The dimension of a vector Space

Review for the Midterm exam

Thursday: **MIDTERM EXAM (Section 1.1 - Section 4.5)**

Friday: Section 4.6 Change of Basis

Section 4.7 Digital Signal Processing

Section 4.8 Applications to Differential Equations

WEEK THREE

Monday: Section 5.1 Eigenvectors and Eigenvalues

Section 5.2 The characteristic Equation

Section 5.3 Diagonalization

Tuesday: Section 5.4: Eigenvectors and linear transformations

Section 5.5 Complex eigenvalues

Section 5.7 Applications to Differential Equations

Wednesday: Section 6.1 Inner product, length and orthogonality

Section 6.2 Orthogonality sets

Section 6.3 Orthogonality projects

Thursday: Section 6.4 Gram Schmidt process

Final Exam Review

Friday: **FINAL EXAM (Comprehensive)**

Grading Policy

Quizzes	20 %
Homework	30%
Midterm Exam	20 %
Final Exam	30%
TOTAL	**100 %**

Grading Scale

The instructor will use the grading system as applied by JNU:

Definition	**Letter Grade**	**Score**
Excellent	A	90~100
Good	B	80~89
Satisfactory	C	70~79
Poor	D	60~69
Failed	E	Below 60

Attendance

You are expected to log in to Zoom to attend class and actively participate in discussions. Attendance will be recorded for each session and will contribute to students' participation records. Students should inform the instructor as early as possible if they need to request a leave of absence. All absences may negatively impact students' final grades. Attendance will be taken at both the beginning and end of each class. If you arrive more than 10 minutes late or leave more than 10 minutes early, your attendance will not be recorded. You are expected to actively participate in class discussions. During the session, you may be randomly selected to assist in solving examples to assess your understanding of core concepts. Additionally, you should be prepared to work through assigned examples during practice time.

Academic Integrity

As members of the Jinan University academic community, students are expected to be honest in all of their academic coursework and activities. Academic dishonesty, includes (but is not limited to) cheating on assignments or examinations; plagiarizing, i.e., misrepresenting as one's own work any work done by another; submitting the same paper, or a substantially similar paper, to meet the requirements of more than one course without the approval and consent of the instructors concerned; or sabotaging other students` work within these general definitions. Instructors, however, determine what constitutes academic misconduct in the courses they teach. Students found guilty of academic misconduct in any portion of the academic work face penalties that range from the lowering of their course grade to awarding a grade of E for the entire course.