暨南大學
JINAN UNIVERSITY

0701M245

Linear Algebra and Differential Equations

Instructor: TBA

Time: December 14, 2026 - January 15, 2027

Office Hours: By appointment.

Contact Hours: 60 (50 minutes each)

Credits: 4

E-mail: TBA

Course Description

In this course we will study linear algebra and differential equations, the topics including matrices and linear equations, determinants, vector spaces, linear transformations, eigenvalues and eigenvectors, first-order linear differential equations, n-th order linear differential equations, systems of linear differential equations.

Prerequisites

0701M230 Calculus II

Required Textbook(s)

Edwards, Penney, Calvis. *Differential Equations and Linear Algebra*, 4th Edition, Pearson.

Course Outline

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

Module 1: Introduction to Differential Equations and Mathematical Models

- Topic: Differential equations and mathematical models; general and particular solutions; slope fields and solution curves
- Assignment 1
- Quiz 1

Module 2: First-Order Differential Equations

- Topic: Separable equations and applications; linear first-order equations; substitution methods and exact equations
- Assignment 2
- Quiz 2

Module 3: Linear Systems and Matrix Methods

- Topic: Introduction to linear systems; matrices and Gaussian elimination; reduced row-echelon form; matrix operations
- Assignment 3
- Quiz 3

Module 4: Inverses, Determinants, and Applications

- Topic: Inverses of matrices; determinants; applications of inverses and determinants to linear systems
- Assignment 4
- Quiz 4

Module 5: Vector Spaces and Subspaces

- Topic: The vector spaces; subspaces; linear combinations; linear independence
- Assignment 5
- Quiz 5

Module 6: Bases, Dimension, and Midterm Review

- Topic: Bases and dimension for vector spaces; review of first-order differential equations, matrices, determinants, and vector spaces
- Assignment 6
- Midterm Exam

Module 7: Eigenvalues, Eigenvectors, and Diagonalization

- Topic: Introduction to eigenvalues; eigenvectors; diagonalization of matrices
- Assignment 7
- Quiz 7

Module 8: Linear Transformations

- Topic: Supplemental material: introduction to linear transformations; the matrix of a linear transformation
- Assignment 8
- Quiz 8

Module 9: Higher-Order Linear Differential Equations

- Topic: Introduction to second-order linear equations; general solutions of linear equations; homogeneous equations with constant coefficients; nonhomogeneous equations and undetermined coefficients
- Assignment 9
- Quiz 8

Module 10: Systems of Differential Equations

- Topic: First-order systems and applications; matrices and linear systems; the eigenvalue method for linear systems; final review

- Assignment 10
- Quiz 9
- Final Exam

Grading Policy

Quizzes	25 %
Assignments	15 %
Midterm Exam	30 %
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

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.