暨南大學 JINAN UNIVERSITY

2022

0701M340
Linear Algebra

Instructor: TBA
Time: October 17, 2022 - November 18, 2022
Office Hours: 2 hours (according to the teaching schedule)
Contact Hours: 60 (50 minutes each)
Credits: 4

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.

Required Textbook(s)

David Poole, *Linear Algebra: A Modern Introduction,* 3rd edition, Brooks/Cole. (Cengage Learning) ISBN-13:978-0538735452
On Coursesmart as eText: ISBN-139781111563790

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

The schedule gives an overview of the major concepts in this course. The actual days on which the topics will be covered are subject to change at the discretion of the course instructor. Numbers in parentheses refer to the related textbook chapters.

Week 1:

- Vectors
- Systems of linear equations and Row Reduction and Echelon Forms and Vector Equations
- Row Reduction and Echelon Forms and Vector Equations; Vector Equations and the matrix equation Ax = b
- The matrix equation Ax = b and Solutions sets of Linear Systems
- Linear Independence and Introduction to Linear Transformations

Week 2:

- The matrix of a linear transformation
- Matrix Operations and the inverse of a matrix
- The inverse of a matrix ,characterizations of invertible matrices and matrix factorization
- Matrix factorization, Subspaces of Rn, and dimension and rank

Week 3:

- Introduction to determinants and properties of determinants
- Cramer's rule, and vector spaces and subspaces
- Null spaces, column spaces, linear transformations, and linearly independent sets and bases
- The dimension of a vector space and Rank
- **Midterm**

Week 4:

- Change of basis, Eigenvalues, and eigenvectors
- Characteristic equation
- Diagonalization
- Eigenvectors and linear transformations, and complex eigenvalues

Week 5:

- Inner product and orthogonality
- Orthogonality sets and orthogonality projects
- Gram Schmidt process
- Final Exam Review
- **FINAL EXAM** (Comprehensive)

Grading Policy

Quizzes	15 %
Homework	25 %
Midterm Exam	30 %
Final Exam	30%
TOTAL	**100 %**

There is a **quiz every Tuesday, a midterm on the third Friday and a Final Exam on the final Friday**. As well, homework will be due throughout the weeks.

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.