暨南大學
JINAN UNIVERSITY

Summer 2019

0701M340
Linear Algebra

Instructor: Hynek Boril
Time: Monday through Friday (June 17, 2019 - July 19, 2019)
Office Hours: 2 hours (according to the teaching schedule)
Contact Hours: 60 (50 minutes each)
Credits: 4
Location: Huiquan Building
Office: Huiquan Building 518
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.

Required Textbook(s)

Linear Algebra and Its Applications, by David C. Lay, 5th edition, 2015.

Prerequisites

No prerequisites.

Course Hours

The course has 25 sessions in total. Each class session is 120 minutes in length. The class meets from Monday to Friday.

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:

Mon Systems of linear equations (1.1)
Tue Row reduction, echelon forms and vector equations (1.2 & 1.3)
Wed The matrix equation of Ax = b and solutions sets of the linear systems (1.4 &1.5)
Thur Linear independence and introduction to linear transformations (1.7 & 1.8)
Fri A case study

Week 2:

Mon The matrix of a linear transformation (1.9)
Tue Matrix operations (2.1)
Wed Inverse matrix and the characteristic of invertible matrices (2.2)
Thur The Leontief I/O model, subspaces of Rn, dimension and rank (2.6, 2.8, & 2.9)
Fri A case study

Week 3:

Mon Introduction to determinants and properties of determinants (3.1 & 3.2)
Tue Cramer's rule, volume and linear transformations, and vector spaces and subspaces (3.3 & 4.1)
Wed **Midterm exam**
Thur Null spaces, column spaces, linear transformations, and linearly independent sets and bases (4.2 & 4.3); The dimension of a vector space and rank (4.5 & 4.6)
Fri A case study

Week 4:

Mon Change of basis, eigenvalues, and eigenvectors (4.7 & 5.1)
Tue The characteristic equation (5.2)

Wed Diagonalization (5.3)
Thur Eigenvectors and linear transformations, and complex eigenvalues (5.4 & 5.5)
Fri A case study

Week 5:

Mon Inner product and orthogonality (6.1)
Tue Orthogonality sets and orthogonality projections (6.2 & 6.3)
Wed Gram–Schmidt process (6.4)
Thu **Final exam**
Fri Final review

Grading Policy

Midterm is worth 30% of the final course grade, the homework is worth 40%, and the final exam is worth 30%.

Homework

There will be an assignment due at the beginning of each class covering the material from the previous day and introducing some of the material from the day on which it is due. No late homework will be accepted, except for the last one. You are encouraged to make sure of the following resources: your classmates, course assistants and the textbook. When you work in a team, you should write down all people's name in your term.

Exams

There will be one midterm and one final exam. No notes may be brought into the exams. The times will be posted or announced later. If you must miss a midterm exam because of an approved conflict, please contact me as soon as possible, and no later than one week before the exam.

Attendance and in-class work

Attendance is mandatory in the class. It would be recorded each class and forms part of students' participation record. Students should inform the instructor at the earliest opportunity if they need to ask for a leave. All absences may have negative effect on students' final grades. Any students with more than three unexcused absences will automatically fail the course.

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.