

King Fahd University of Petroleum & Minerals
Department of Mathematics & Statistics
MATH 225 Syllabus
First Semester 2020-2021 (Term 201)
Instructor: Dr. Abdallah Laradji

Course Title: Introduction to Linear Algebra

Textbook: Linear algebra with applications, Steven J. Leon, 9th edition, Pearson

Description: Matrices and systems of linear equations. Vector spaces and subspaces. Linear independence. Basis and dimension. Inner product spaces. The Gram-Schmidt process. Linear transformations. Determinants. Diagonalization. Real quadratic forms.

Objective: This course introduces the basic concepts and techniques of elementary linear algebra

Course Plan

Week	Date	Section	Topic
1	Aug 30-Sep 3	1.1-1.2	Systems of linear equations -Row echelon form
2	Sep 6-10	1.3-1.4	Matrix arithmetic - Matrix algebra
3	Sep 13-17	1.5	Elementary matrices
4	Sep 20-24	2.1-2.2-2.3	The determinant of a matrix - Properties of determinants - Additional topics
5	Sep 27-Oct 1	3.1-3.2	Vector Spaces: Definitions & examples - Subspaces
6	Oct 4-8	3.3-3.4	Linear independence -Basis & dimension
7	Oct 11-15	3.5-3.6	Change of basis - Row space & column space
8	Oct 18-22	4.1-4.2	Linear transformations: Definitions & examples - Matrix representations of linear transformations
9	Oct 25-29	4.3-5.1	Similarity - Orthogonality: Scalar product in \mathbb{R}^n
10	Nov 1-5	5.2-5.4	Orthogonal subspaces - Inner product spaces
11	Nov 8-12	5.5	Orthonormal Sets
12	Nov 15-19	5.6	The Gram-Schmidt Orthogonalization Process
13	Nov 22-26	6.1	Eigenvalues & Eigenvectors
14	Nov 29-Dec 3	6.3	Diagonalization
15	Dec 6-10	6.6	Quadratic Forms
16	Dec 13-17		Review & catch-up

Grade Distribution

Exam 1: 15% (Chapters 1 & 2, Wednesday 30 September, 6:00-7:15 PM)
 Exam 2: 15% (Chapter 3, Monday 19 October, 6:00-7:15 PM)
 Midterm Exam: 15% (Chapter 4, Monday 9 November, 6:00-7:15 PM)
 Exam 3: 15% (Chapter 5, Monday 30 November, 6:00-7:15 PM)
 Homework: 15%
 Final Exam: 25%

Attendance: Six unexcused absences will result in a DN grade.

Academic Integrity: KFUPM ethics policies will be strictly enforced.