

King Saud University
Department of Mathematics

Math-244 (Linear Algebra) / Syllabus Semester 2 of Academic Year 1440-1441H

Course Contents:

Matrices: Matrices and matrix operations; elementary row and column operations; inverse of a matrix; special matrices.

Determinants: Definition of determinant of a matrix; evaluation of a determinant; properties of determinants; adjoint of a matrix and its properties.

Systems of Linear Equations: Systems of linear equations; Gauss and Gauss – Jordan elimination methods; homogeneous systems of linear equations; Cramer’s Rule.

Vector Spaces: Definition of a vector space and examples; subspaces; linear combinations and linear span of a sets of vectors; linear dependence and linear independence of a set of vectors; basis and dimension of a vector space; coordinates of a vector with respect to a basis; change of basis; rank and nullity of a matrix.

Inner Product Spaces: Definition of inner product and inner product space with examples; orthogonal and orthonormal sets of vectors; orthonormal basis; Gram-Schmidt orthonormalization process.

Linear Transformations: Definition of a linear transformation and examples; basic properties of linear transformations; kernel and image spaces of a linear transformation; matrix of linear transformation.

Eigenvalues, Eigenvectors and Diagonalization: Eigenvalues and eigenvectors of a matrices; diagonalization of a matrix.

Recommended Book: “Elementary Linear Algebra (Applications Version)” by Howard Anton and Chris Rorres, 11th Edition, Wiley, USA, 2014.

Evaluation: Mid-term Exam I: 25%; Mid-term Exam II 25%; Quizzes: 10%; Final Exam: 40%.

Date of Mid-term Exam I: 17 March 2020 G (Tuesday; 7:00 to 8:30 pm)

Date of Mid-term Exam II: 14 April 2020 G (Tuesday; 7:00 to 8:30 pm)

Date of Final Exam: Awaited