MTH 261A : INTRODUCTION TO LINEAR ALGEBRA

Transcript title
Introduction to Linear Algebra

Credits
2

Grading mode
Standard letter grades

Total contact hours
20

Lecture hours
20

Recommended preparation
MTH 252.

Course Description
Provides an introduction to linear algebra concepts for science, math, and engineering majors. Topics include vectors, matrices, systematic solution to linear systems, determinants, linear dependence and independence, linear transformations, and eigenvalues and eigenvectors.

Course learning outcomes
1. Use matrix notation, basic properties of determinants, and algebraic properties of matrices to express and solve linear systems of equations.
2. Apply properties of vector algebra to solve two- and three-dimensional geometric problems.
3. Describe a linear transformation given the corresponding matrix, and find a matrix given the description of the linear transformation.
4. Determine linear dependence and independence for a set of n vectors in n-space.
5. Find the characteristic polynomial and eigenvalues/eigenvectors of particular (small) matrices and explain the concepts as they apply to matrices of any size.

Content outline
Vectors • Vector definitions and computation • Dot products, projections, and components • Vector equations of lines and planes • Cross products Matrices • Solving systems of equation with matrices • Gauss-Jordan elimination • Determinants • Matrix operations • Matrix inverse • Transpose Relationships between vectors and matrices • Dependence and independence of vectors • Matrices as transformations • Projections • Eigenvalues and eigenvectors

Required materials
A textbook is required.