MATHEMATICS 311
"LINEAR METHODS II"

Calendar Description: H(3-1T)

Vector spaces and subspaces. Linear independence. Matrix representation of linear transformations. Eigenvalues and eigenvectors. Quadratic forms. Inner products. Gram-Schmidt orthogonalization.

Prerequisite: Mathematics 211 or 221.

Syllabus

Topics	Number of Hours
Euclidean n-space, abstract vector spaces, subspaces, independence, basis and dimension, row and column space of a matrix, rank, application to systems of equations	10
Eigenvalues, similarity, diagonalization, orthogonality, Gram-Schmidt process, principal axes theorem, applications to approximation	10
Linear transformations, kernel and image, composition, matrix representation, change of basis, invariant subspaces, direct sums.	10
Inner products, length, angles, orthogonal sets, orthogonal diagonalization.	6
TOTAL HOURS	36

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