SU DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE
SYLLABUS (Tentative)
MATH 306 Linear Algebra

Objectives: To develop the theory of vectors, matrices, and inner products, with emphasis on concepts and techniques used in geometry and physics.

Prerequisite: A second course in Calculus (MATH 202).


Chapter 1 Linear Equations
Systems of linear equations: existence, uniqueness, elementary row operations; Gauss-Jordan row reduction and echelon forms; vector equations; linear independence; linear transformations; applications of linear systems.

Chapter 2 Matrix Algebra
Matrix operations; inverse of a matrix; characteristics of invertible matrices; subspaces of Rn.

Chapter 3 Determinants
Introduction to determinants; properties of determinants; Cramer's rule, volume, and linear transformations.

Chapter 4 Vector Spaces
Vector spaces and subspaces; null spaces, column spaces, and linear transformations; linearly independent sets and bases; coordinate systems; dimensions of a vector space; rank.

Chapter 5 Eigenvalues and Eigenvectors
Eigenvectors and eigenvalues; the characteristic equation; diagonalization, eigenvectors & linear transformations, complex eigenvalues.

Chapter 6 Orthogonality and Inner Product
Inner product, length, and orthogonality; orthogonal sets; orthogonal projections.

Optional Topics, Review, Tests, Group Work
Including, but not restricted to: Eigenvectors and linear transformations; complex eigenvalues; Gram-Schmidt process; least square problems; applications in computer graphics.

EVALUATION
Tests 40-50%
Homework/Projects 20-40%
Final exam 20-30%

NOTE: ONCE A STUDENT HAS RECEIVED CREDIT, INCLUDING TRANSFER CREDIT, FOR A COURSE, CREDIT MAY NOT BE RECEIVED FOR ANY COURSE WITH MATERIAL THAT IS EQUIVALENT TO IT OR IS A PREREQUISITE FOR IT.