A. Course Description

Credits: 4

Prerequisites:
MATH 211 Calculus II AND
MATH 215 Discrete Mathematics

OR

MATH 211 Calculus II AND
MATH 310 Calculus III: Multivariable Calculus

Lab Hours/ Weeks: Corequisites: None

MnTC Goals: Goal 04 - Mathematical/Logical Reasoning, Goal LS - Upper Division Liberal Studies

The need to solve systems of linear equations frequently arises in mathematics, the physical sciences, engineering and economics. In this course we study these systems from an algebraic and geometric viewpoint. Topics include systems of linear equations, matrix algebra, Euclidean vector spaces, linear transformations, linear independence, dimension, eigenvalues and eigenvectors.

B. Course Effective Dates: 09/06/1999 - 05/04/2002 05/04/2002 - 08/14/2010 08/15/2010 - Present

C. Outline of Major Content Areas:

See Course Description for major content areas.

D. Learning Outcomes (General)

1. Demonstrate algebraic and geometric understanding of properties of linear systems, matrix algebra, linear independence, dimension, coordinate systems, eigenvalues and eigenspaces, diagonalization, and the spectral theorem.
2. Demonstrate sophisticated comprehension of linear transformations and the algebraic and geometric structures of subspaces and linear spaces.
3. Formulate and structure mathematical proofs.
4. Successfully apply linear algebra concepts to mathematically model and analyze problems of current interest in the sciences, economics, engineering, and technology.

E. Learning Outcomes (MN Transfer Curriculum)

Goal 04 - Mathematical/Logical Reasoning
1. Apply higher-order problem-solving and/or modeling strategies.
2. Clearly express mathematical/logical ideas in writing.
3. Illustrate historical and contemporary applications of mathematical/logical systems.
4. Explain what constitutes a valid mathematical/logical argument(proof).

Goal LS - Upper Division Liberal Studies
None

G. Special Information

Note: Students whose prerequisites are not identified by the system would contact the Math and Statistics Department for an override at MATH@metrostate.edu. First day attendance required except by instructor permission.