If Revision, Section(s) Revised: F, G, M, P, Q

Date of Previous Revision: January 14, 1993

Date of Current Revision: June 28, 2002

C: Math 232 **D**: Linear Algebra **E:** 3

Subject & Course No.	Descriptive Title	Semester Credits

F: Calendar Description:

Math 232 is a one semester introductory course designed to provide a solid foundation in the mathematics of linear algebra. This course is often the first course in abstract mathematics and the student is taught how to prove theorems. Topics include the solving of systems of equations, matrices and determinants, the vecto

M: Course Objectives / Learning Outcomes

- determine the characteristic polynomial, eigenvalues and corresponding eigenspaces of a given matrix
- prove that similar matrices have the same eigenvalues and use this property to diagonalise a square matrix
- compute the power of a square matrix using the fact that $A^n = PD^nP^{-1}$
- prove the triangular inequality using the Cauchy-Schwartz Inequality (optional)
- solve systems of first order recurrence equations and second order recurrence (difference) equations (optional)
- apply techniques of linear algebra to solve problems related to : electrical network analysis, traffic flow, Leontif Input-Output models, Markov chains, and/or computer graphics (optional)

N: Course Content:

1. Solving Systems of Equations
2. The Algebra of Matrices
3. Determinants
4. The Vector Space $\mathbb{R}^n$
5. Vector Geometry
6. General Vector Spaces
7. Inner Product Spaces
8. Linear Transformations and Linear Operators
9. Eigenvalues and Diagonalisation

O: Methods of Instruction

Lectures, problem sessions and assignments

P: Textbooks and Materials to be Purchased by Students

Lay, David C., Linear Algebra and its Applications, 2nd Edition, Addison Wesley Longman, Inc., 2000.

Q: Means of Assessment

Evaluation will be carried out in accordance with Douglas College policy. The instructor will present a written course outline with specific evaluation criteria at the beginning of the semester. Evaluation will be based on some of the following:

1. Weekly tests	0 – 40 %
2. Midterm tests	20 – 70%
3. Assignments	0 – 20%
4. Attendance	0 – 5%
5. Class Participation	0 – 5%
6. Final Examination	30 – 40%

R: Prior Learning Assessment and Recognition: specify whether course is open for PLAR

None

Course Designer(s)

Education Council / Curriculum Committee Representative

Dean / Director

Registrar