I. GENERAL COURSE INFORMATION

Course Number: MA1833
Course Title: Linear Algebra
Credit Hours: 3
Prerequisite: MA1832 Calculus I
Division and Discipline: Division of Natural Science and Allied Health
Department of Mathematics
Course Description: Basic concepts of linear algebra with applications.

II. CLASSROOM POLICY

Students and faculty of Barton County Community College constitute a special community engaged in the process of education. The college assumes that its students and faculty will demonstrate a code of personal honor which is based upon courtesy, integrity, common sense and respect for others both within and outside the classroom.

III. COURSE AS VIEWED IN TOTAL CURRICULUM

This course is designed for math, science and engineering student who has successfully completed Calculus I.

IV. OBJECTIVES

The students upon completing the course will be able to:

1. solve systems of linear equations
   1) systems of two linear equations in two variables
   2) systems of linear equations having unique solutions
   3) Gauss-Jordan Elimination
   4) Gaussian Elimination
   5) some applications

2. apply matrices
   1) addition, scalar multiplication, and multiplication
   2) properties of matrix operations
   3) symmetric matrices and its application
   4) the inverse of a matrix
   5) some applications

3. use determinants
   1) basic definition
   2) properties of determinants
   3) numerical evaluation of a determinant
   4) relationships among determinants, matrix inverses, and systems of linear equations

4. define the vector space R^n
   1) definition of vectors
   2) subspace of R^n
   3) linear combination of vectors
   4) linear dependence and independence

5) bases and dimension
6) rank of a matrix

5. understand n-dimensional Euclidean space
   1) dot product, norm, angle, and distance
   2) orthonormal vectors, projections
   3) cross product
   4) equations of planes and lines in three-space

6. define general vector space
   1) general vector spaces
   2) inner product spaces

7. utilize linear transformations
   1) matrix transformations, computer graphics, and fractals
   2) kernel and range
   3) coordinate vectors
   4) matrix representations of linear transformations

8. understand eigenvalues and eigenvectors
   1) define eigenvalues and eigenvectors
   2) diagonalization of matrices
   3) some applications

V. INSTRUCTOR EXPECTATION OF STUDENTS IN CLASS

Each student is expected to attend class daily and complete homework assignments on or before the due date. Time for make up work is limited and at some times unavailable. As a result, class attendance and participation are important to the learning process.

VI. TEXT AND REQUIRED MATERIALS

Linear Algebra with Applications, 2nd edition
Gareth WILLIAMS
Wm.C. Brown Publishers, 1991

VII. REFERENCES

Student's Solution Manual to Linear Algebra with Applications
Wanda Mourant
Wm.C. Brown Publishers, 1991

VIII. COURSE OUTLINE

A. Systems of Linear Equations

B. Matrices

C. Determinants

D. The Vector Space R^n

E. n-Dimensional Euclidean Space

F. General Vector Spaces

G. Linear Transformations

H. Eigenvalues and Eigenvectors

IX. METHOD OF EVALUATION

Exams and homework assignments are used to evaluate each student's knowledge and understanding of the course material. There will be several chapter exams during the session. The homework will be assigned on a daily basis.

The following scale is used to determine the final grade.

90 - 100%	A
80 - 89%	B
70 - 79%	C
60 - 69%	D
0 - 59%	F

X. ATTENDANCE REQUIREMENTS

Regular attendance in class and laboratory sessions is an obligation assumed by each student at the time of registration. It is the student's responsibility to fulfill all the requirements of a course as prescribed by the instructor. If a student must miss a class, arrangements should be made in advance with the instructor. Instructors provide the opportunity for students to make up in a reasonable and appropriate manner work missed for a school-related activity, verifiable illness, personal emergency, or death of a family member or close friend within the time frame established by the instructor. A published procedure allows students to address inequities in this policy.