

**Department of Mathematics, Computer & Information Science**

## LINEAR ALGEBRA

MA3160 **SYLLABUS** FALL 2007

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*Office Hours*    **MW 12:00 – 3:00 pm**

*Course Web Page*    **<http://www.math.uncc.edu/~gtechani>**

**TEXTBOOK:** *Elementary Linear Algebra*, 9th Edition, Howard **Anton**, Wiley, 2004

**Prerequisite:** Calculus & Analytic Geometry I - MA2310

**COURSE DESCRIPTION:** This course discusses the main concepts and terminology of linear algebra. Some of the topics included are systems of linear equations, matrices and determinants, vectors in 2-space and 3-space, Euclidean vector spaces, general vector spaces, subspaces, linear independence, bases and dimension, eigenvectors and eigenvalues, diagonalization, and linear transformations.

**COURSE OBJECTIVES:** Upon successful completion of this course students should: be able to solve systems of linear equations using a variety of methods; carry out the basic operations of matrix algebra; interpret the geometric properties of vectors in Euclidean  $n$ -space; define linear transformation and represent by matrices; comfortable with the axiomatic definitions of general vector spaces; determine whether a specified set of vectors forms a subspace; understand the notion of span and basis; calculate eigenvalues and eigenvectors of a square matrix; determine when a matrix is diagonalizable; write proofs of statements involving vector spaces, subspaces, linear independency, basis, and linear transformation.

**COURSE EVALUATION & GRADING:** Your grade for the course will be based on your homework performance, tests, and a comprehensive final exam. The grading scale is as follows:

<b>A</b> = [93, 100] <b>A<sup>-</sup></b> = [90, 92]	<b>B<sup>+</sup></b> = [87, 89]	<b>C<sup>+</sup></b> = [77, 79]	<b>D<sup>+</sup></b> = [67, 69]	<b>F</b> = [0, 59]
	<b>B</b> = [83, 86]	<b>C</b> = [73, 76]	<b>D</b> = [63, 66]	
	<b>B<sup>-</sup></b> = [80, 82]	<b>C<sup>-</sup></b> = [70, 72]	<b>D<sup>-</sup></b> = [60, 62]	

**TUTORIAL:** Drop-in tutorial is available in the mathematics learning center, Room **A118**.

## TOPICS TO BE COVERED

*Text* **Elementary Linear Algebra**, 9th Edition, Howard **Anton**, Wiley, 2004

CHAPTER 1    **SYSTEMS OF LINEAR EQUATIONS AND MATRICES**

CHAPTER 2    **DETERMINANTS**

CHAPTER 3    **VECTORS IN 2-SPACE AND 3-SPACE**

CHAPTER 4    **EUCLIDEAN VECTOR SPACES**

CHAPTER 5    **GENERAL VECTOR SPACES**

CHAPTER 6    **INNER PRODUCT SPACES**

CHAPTER 7    **EIGENVALUES AND EIGENVECTORS**

CHAPTER 8    **LINEAR TRANSFORMATIONS**