

MATHEMATICS 310 LINEAR ALGEBRA (3) (EFFECTIVE SPRING 06)
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PREREQUISITE: Math 160 or Math 314 or Math 251.

CATALOG DESCRIPTION: Vectors, matrices, systems of linear equations, determinants, inverses of matrices, vector spaces, linear transformations, eigenvalues, and eigenvectors.

OBJECTIVES The student will:

1. Solve systems of equations using row echelon and reduced row echelon matrices.
2. Compute sums and products of matrices.
3. Calculate the inverse, if it exists, of a matrix.
4. Use determinants to solve systems of equations.
5. Define and illustrate vector spaces.
6. Calculate matrix representations of linear transformations.
7. Determine isomorphic linear transformations.
8. Determine isometric linear transformations.
9. Determine eigenvalues and eigenvectors.
10. Diagonalize matrices.
11. Orthogonally diagonalize symmetric matrices.

TEXT: Elementary Linear Algebra - Applications Version, 9th Edition, by Anton/Rorres, Wiley & Sons. ISBN 0-471-669598

OUTLINE

CHAPTER	TITLE/SECTIONS	DAYS
1	Systems of Linear Equations & Matrices (1-7)	6
2	Determinants (1-4)	4
3	Vectors in 2-Space and 3-Space (1-5)	4
4	Euclidean Vector Spaces (1-3)	3
5	General Vector Spaces (1-6)	7
6	Inner Product Spaces (1-6)	5
7	Eigenvalues, Eigenvectors (1-3)	4
8	Linear Transformations (1-2)	3
	Applications (from chapters 9 and/or 11)	3
	Tests	<u>3</u>
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NOTES: Emphasize eigenvalues and eigenvectors (chapter seven). The applications should be dispersed throughout the semester. This course is to have an application, rather than theoretical, orientation. Students should also become capable of constructing valid formal proofs of basic, elementary results.