



## MATHEMATICS 311 "LINEAR METHODS II"

**Calendar Description:** H(3-1T)

Vector spaces and subspaces. Linear independence. Matrix representations of linear transformations. Gram-Schmidt orthogonalization. Students will complete a project using a computer algebra system.

**Prerequisite:** Mathematics 211 or 221 or 213.

**Note:** Credit will not be given for Mathematics 311 and 313.

### *Syllabus*

<u>Topics</u>	<u>Number of Hours</u>
Vector spaces, subspaces, independence, basis and dimension, row and column space of a matrix, rank, applications.	10
Linear transformations, kernel and image, composition, linear functionals, the double dual, transpose of a linear transformation.	10
Orthogonality, Gram-Schmidt process, orthogonal diagonalization and least squares approximation, quadratic forms, SVD.	12
Change of basis.	4
<b>TOTAL HOURS</b>	<b>36</b>

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