

## APPLIED MATHEMATICS 441 "LINEAR SPACES WITH APPLICATIONS"

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

Linear operators and matrices. Jordan forms. Eigenvalue problems. Quadratic forms. Applications.

**Prerequisite:** Mathematics 311 and one of Mathematics 353, Applied Mathematics 309 or Mathematics 331.

### *Syllabus*

<u>Topics</u>	<u>Number of Hours</u>
Matrix Algebra: Determinant, Gaussian Elimination and LU factorization, Schur complement, Rank	6
Linear Space and Transformation: Linear transformation, Change of bases, Orthogonal bases and Gram-Schmidt orthogonalization, QR factorization	9
Canonical Forms of Matrices: Schur canonical form, normal matrices, Hermitian forms and congruence, definite matrices, minimax theorem, small vibrations	11
Jordan canonical form and linear differential equations	6
Generalized inverse and Singular value decomposition, solution of least squares problem	4
<b>TOTAL HOURS</b>	<b>36</b>

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