UNIVERSITY OF CALGARY

FACULTY OF SCIENCE
Department of Mathematics and Statistics

Mathematics 411 Linear Spaces with Applications

Canonical forms. Inner product spaces, invariant subspaces and spectral theory. Quadratic forms.
Course Hours: H(3-1T)
Prerequisite(s): Mathematics 311 and one of 331, 353, or Applied Mathematics 309.
Antirequisite(s): Credit for Mathematics 411 and 313 or Applied Mathematics 441 will not be allowed.
Notes: May not be offered every year. Consult the Department for listings.

Syllabus

Topics	**Number of Hours**
Fields, algebras, vector spaces	3
Elementary canonical forms: invariant subspaces, simultaneous diagonalization, direct-sum decompositions, invariant direct sums.	8
Rational and Jordan forms.	6
Inner product spaces, adjoint, Hermitian, unitary and normal operators.	8
Operators on inner product spaces, form, the Spectral theorem.	6
Bilinear and quadratic forms.	5
TOTAL HOURS	**36**

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