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THE UNIVERSITY OF
CALGARY

The Department of Mathematics and Statistics

MATH 221
"LINEAR ALGEBRA FOR SCIENTISTS AND ENGINEERS"

Calendar Description: H(3-1T-1)
Systems of equations and matrices, vectors, matrix representations, and determinants. Complex numbers, polar coordinates. Eigenvalues, eigenvectors. Applications in the physical sciences.
Prerequisite: A grade of 70% or higher in Mathematics 30 or equivalent; ~~or a grade of 50% or higher in Mathematics 31~~; or a satisfactory grade on a diagnostic test administered by the Department of Mathematics and Statistics; or a grade of "B-" or better in College Algebra and Trigonometry offered by the Faculty of Continuing Education.
Note: Credit for both Mathematics 211 and 221 will not be allowed.

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Syllabus

Topics	Number of hours
Systems of linear equations, homogeneous case, rank	3
Matrix algebra, linear transformations, change of coordinates	6
Determinants by row reduction, application to inversion, rank	4
Eigenvalues, eigenvectors, diagonalization	4
Vectors in $\mathbb{R}^2$ and $\mathbb{R}^3$, dot and cross product, lines, planes, area, volumes	9
Matrix transformations in $\mathbb{R}^2$	4
Polar coordinates, complex numbers	5
Other topics, review	3
	38

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