



Mathematics 211 **Linear Methods I**

Systems of equations and matrices, vectors, matrix representations and determinants. Complex numbers, polar form, eigenvalues, eigenvectors. Applications.

Course Hours: H(3-1T-1)

Prerequisite(s): A grade of 70 per cent or higher in Pure Mathematics 30. (Alternatives are presented in the paragraph titled Mathematics Diagnostic Test in the Program section of this Calendar).

Antirequisite(s): Credit for [Mathematics 211](#) and either 221 or 213 will not be allowed.

Syllabus

<u>Topics</u>	<u>Number of hours</u>
Systems of linear equations, Gauss-Jordan elimination, homogeneous systems, rank	3
Vectors in \mathbb{R}^2 and \mathbb{R}^3 , dot and cross products, projections, lines, planes, area, volumes	9
Matrix transformations in \mathbb{R}^2 , linear transformations	4
Matrix algebra, transpose, inverses, applications to systems of equations	6
Determinants by row reduction and their properties, application to inversion, area	4
Eigenvalues, eigenvectors, diagonalization	4
Polar coordinates, Complex numbers	4
Selected applications (Markov Chains, economic models, least squares approximation, linear programming)	2
TOTAL HOURS	36

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