

This is a standard first year linear algebra course, parallel to MATH-110, with emphasis on applications. Students intending an honours concentration in Mathematics normally take 110, while other mathematics students take either 110 or 111. MATH-111 is also an important service course for students headed for the natural, social and life sciences.

Textbook: *Linear Algebra with Applications*
by P. D. Taylor (sold in class)

Prerequisite: Ontario Grade 12 Calculus *or* Algebra *and* Geometry.

Instructors: P. D. Taylor (Section A)
N. Yui (Section X)

Evaluation:	10 Assignments	20%
	2 Midterm Tests	20%
	Midyear Examination	20%
	Final Examination	40%

Outline:

1. Basics: Solving equations, matrix multiplication, matrix inverse.
2. Eigenvalues. Applications to recursive equations, dynamical systems.
3. Applications to structured populations, brine tanks, currency systems.
4. Markov chains, board games, pagerank algorithm.
5. Orthogonality. Lines and planes. Approximate solutions. Regression analysis, Error-correcting codes.
6. Linear and Affine transformations. Warping. Iterated function systems.

Appendix: Solving Equations, Mathematical Induction.