

Math 405/805 Applications of Matrix Theory

Instructor: Norman Rice: ricen@mast.queensu.ca , Jeffery 205, 533-2442
Office hours (Fall Term only): Mon. 10:30-11:30; Wed. 9:30-10:30; Thur. 9:30-10:15
or other times by appointment or as available.

Topics: The course covers various topics in matrix theory and their applications, including: (a) Decompositions and canonical forms of matrices, with applications to dynamical systems, numerical methods, optimization, and functions of a matrix; (b) Eigenvalue properties of non-negative matrices, with applications to Markov Chains and population dynamics; (c) Generalized inverses of matrices, with applications to linear equations, linear Diophantine equations, statistics, and optimization. For details on the topics covered see [here](#).

Text Materials: There is no prescribed text. Most of the material can be found in one or another of the books listed [here](#), available in the Douglas Library, some of which have been placed on reserve for three-day loan.

Prerequisites: First and second year calculus, and some linear algebra beyond first year.

Evaluation:

Homework (each Thursday)...10% ;	Project (for grad students)....10% (See details here .)
Test (Wednesday Oct. 26).....20% ;	Exam . . .60% or 70%, or 100% if better than class mark.

Homework: Click here to see [weekly homework assignments and solutions](#).

Software

You will certainly need some math software (Matlab, Maple, spreadsheets, etc.) You may use any software you like for assignments, etc. For tests and exam you may only use hand calculators.

An excellent **free numerical methods program** is *Euler*, which you can [download from here](#).

For doing matrix row/column/pivot operations, download the handy matrix program [MATRIX](#).