Professor: Eyal Markman
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Course Web page: http://www.math.umass.edu/~markman/ Please check it often!
Office hours: (tentative) Wednesday 12:05 → 1:30 pm, Thursday 12:30 → 2:00 pm, and by appointment.

Prerequisites: Introductory course, such as Math. 235 or 236.
Text: The main text will be:
Some topics will be taken from Linear Algebra and Its Applications, 4th Edition. by Gilbert Strang, Publisher: Thomson Learning. It will be available on reserve in the library.

Homework: Will be assigned weekly and will be due each Friday, unless mentioned otherwise. The homework will be graded by a special grader. Due to lack of funds, it will not be possible to grade all the homework problems assigned. A few of the homework problems will be corrected and graded every week. Nevertheless, for your own benefit, you will be asked to hand in all the homework problems assigned. Your grade on each homework assignment will be calculated as follows:

70% The grade on the corrected problems.
30% Credit for handing in most of the homework problems assigned. Partial credit will be given.

Late homework will not be collected. Instead, your three lowest grades will be dropped.
Grades:

Homework-20%
Two Midterms-50% (each 25%)
Final Exam -30%

First Midterm: Thursday, March 15, 5 to 6:30 PM.
Second Midterm: Thursday, April 26, 5 to 6:30 PM.
Final: During the week beginning Thursday, May 17 and ending on Thursday, May 24. The precise date is yet to be determined.
See back . . .
Syllabus:

1. A brief review of basic linear algebra. (Corresponding to the first six Chapters of Curtis, most of which will be assumed as prerequisite).

2. The theory of a single linear transformation.
   (a) Eigenvalues, eigenvectors, characteristic polynomial
   (b) Minimal polynomial
   (c) Invariant subspaces, direct sums
   (d) Primary decomposition
   (e) Diagonalizable operators
   (f) Triangular form, Cayley-Hamilton Theorem
   (g) Rational and Jordan canonical form

3. Orthogonal and Unitary transformations
   (a) The Gram-Schmidt process
   (b) The structure of orthogonal transformations
   (c) The Principal Axis Theorem
   (d) Unitary transformations and the Spectral Theorem

4. Further topics and applications (selection among the following):
   (a) Systems of first order linear differential equations
   (b) The QR-algorithm for eigenvalues
   (c) Least square solution of a linear system
   (d) Perron-Frobenius Theorem
   (e) Singular value decomposition
   (f) Other applications, depending of time constraints and class preference.