

Syllabus – Math 4242 – Fall 2003

Instructor Tamon Stephen

Office: 358 Lind Hall (just beyond the ‘Old Electrical Engineering’ sign)

E-mail: tamon@ima.umn.edu

Homepage: www.ima.umn.edu/~tamon/4242/math4242.html

Text. *Linear Algebra with Applications*, Steven J. Leon (Sixth Edition).

Grades will be based on

Homework: 25%, 3 Tests: 25% each

Tests. There will be three one hour in-class tests. The tentative dates will be October 8th, November 14th and December 12th.

Students enrolled in this course must plan to take the exams at their scheduled times.

The tests are closed book.

Syllabus. This is a second, advanced course in Linear Algebra which assumes the student has already mastered a one semester course in Linear Algebra. We will assume some exposure to systems of linear equations, Gaussian elimination, determinants, vector spaces, linear independence, basis and dimension, but these concepts will be briefly reviewed. New topics will include Cramer’s rule, the row space and column space and the relationships between their dimensions, linear transformations and matrices, inner product, orthogonality, the Gram-Schmidt algorithm, eigenvalues and eigenvectors, diagonalization, hermitian matrices, the singular value decomposition, quadratic forms, positive definite matrices, a short section on numerical linear algebra and the Jordan canonical form.

I plan to follow the Leon text fairly closely. The first three chapters, and to a lesser extent the fourth are considered to be review and will be treated quickly in the first five weeks of class. The heart of the course will be the chapters on orthogonality and eigenvalues, which we will study for about three weeks each. We will then cover sections 7.4 to 7.7 on numerical linear algebra for two weeks, and finally chapter 9 on the Jordan canonical form. Note that chapter 9 is not included in the textbook, but is available as a “Web Supplement” from Prentice-Hall at <http://www.prenhall.com/leon>. There is also a direct link to a copy of this file on the course web page.