

Syllabus – Math 571 Fall 2007 - TR 12:40-1:55, Ayres 309A

Course Information:

This course covers Numerical Linear Algebra (NLA) and Nonlinear Equations (NE). In NLA we will cover linear systems, least squares and eigenvalue problems. We will develop different factorizations and iterative algorithms. For NE we will discuss Newton's and other iterative methods.

The prerequisites for this course are: Multi-variable calculus, linear algebra, introductory numerical analysis/methods, some experience programming in FORTRAN, PASCAL, C, or a similar language, and some experience with proofs.

Resources:

- ◇ Text (1): *Numerical Linear Algebra*, by Lloyd N. Trefethen and David Bau, III, SIAM 1997.
- ◇ Text (2): *Numerical Methods for Unconstrained Optimization and Nonlinear Equations*, by J. E. Dennis, Jr. and Robert B. Schnabel, SIAM, 1996.
- ◇ Web-page: <http://www.math.utk.edu/~ccollins/M571> This contains copies of handouts and a schedule of topics (mostly after-the-fact).

Grading: Because students take this course for a variety of reasons, I'm providing two possible tracks through the course. You will need to decide and tell me which track you are taking

	Prelim Track	Practical Track
Homework	55%	50% (drop 4 problems)
Project(s)	1 for 10%	3 for 30%
Midterm	15%	–
final	20%	20%

- ◇ Homework will be assigned every week. It will consist of 2-5 problems due the following week. Late work: you get one chance to turn your homework in 1 day late with no penalty, otherwise you'll be penalized 20% per day late.
- ◇ Project(s) will be computer implementation of specific algorithms. More details and deadline(s) will be provided later.
- ◇ Midterm and Finals will be based on homework-like material, and definitions and results discussed in class.

Instructor:

Charles Collins - 312B Ayres Hall - 974-4269 or 974-2461 - [ccollins@math.utk.edu](mailto:ccollins@math.utk.edu)  
Office Hours: TR 2-3 and by appointment

## University's Honor Statement:

"An essential feature of the University of Tennessee is a commitment to maintaining an atmosphere of intellectual integrity and academic honesty. As a student of the University, I pledge that I will neither knowingly give nor receive any inappropriate assistance in academic work, thus affirming my own personal commitment to honor and integrity."

## Plagiarism:

"Students shall not plagiarize. Plagiarism is using the intellectual property or product of someone else without giving proper credit. The undocumented use of someone else's words or ideas in any medium of communication (unless such information is recognized as common knowledge) is a serious offense, subject to disciplinary action that may include failure in a course and/or dismissal from the university. (from Hilltopics Student Handbook 2004-05, page 11)

For this class, this means that

1. You must document any homework solutions you get from other sources (book, web, etc.). To document means to give the title, author and page number or web address. This should be at the beginning of your solution write up. You should also document when you get the main idea for the solution from another written resource or use a major theorem or result that is not in our primary text. You do not have to document results from our primary text.
2. Your written work must be your own. You may discuss homework problems with other students, but only in a fairly general way. You may not share written solutions. So once you start writing up your solution, do not discuss or share it with another student. It is as much of an offense to let someone copy your work as to copy someone's work.

If there is an obvious violation of these policies, you will receive a 0 on the problem (1st offense), 0 on the homework set (2nd offense), or 0 in the course and report to the administration (3rd offense). If there are signs that such activity is going on (like too similar notation, examples, arguments or mistakes), I will give a warning (once).