Course Website: TBA.


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Course goals: The objective of this course is for you to become familiar with the topics and ideas of fundamental importance in numerical analysis and scientific computing. In particular, I would like you to have the following skills at the end of the course:

- To be able to design an efficient algorithm for solving a given problem that takes advantage of any special structure the problem has.
- To be able to write clear, efficient Matlab code to implement your algorithm.
- To think about and design algorithms with vector and matrix operations in mind.
- To be familiar with some useful Matlab functions.
- To be able to think about error and stability in your algorithms.

Grading: Breakdown is as follows:
Homework: 35%
Midterm: 25%
Final: 40%
The homework is due every Monday in lecture (except the 3rd and 6th homework assignments) and is issued every Monday. Late homework will not be accepted. The midterm will be held in class on Monday, July 16th. Homework will be graded on correctness/completeness, efficiency, and on style. Style includes such things as comments, spacing and indentation in code, and efficiency includes proper memory management and vectorization of code.
**Starred Problems:** Every homework assignment will include one or more *starred problems*. They are graded separately from regular homework problems and are usually more challenging. You are not required to do all starred problems, but you must do at least three starred problems total over the whole course.

**Fridays:** TA sections are held on Fridays during normal lecture hours, with the exception of the first week. Homework is returned during these sections and issues concerning previous and current homework assignments are discussed. The TA will hold lectures on peripheral yet pertinent topics not covered in normal lectures.

**Final exam:** The final will be held on August 7th during regular class hours (1:00p-2:15p) in Upson 207 and will cover all of the material in the course.

**Textbook:** C. Moler, *Numerical Computing with MATLAB*,
http://www.mathworks.com/moler

**Software:** We will work exclusively with Matlab. I recommend you use version 7 or higher. A student version is available in the Cornell Store. Most of the computers in the engineering buildings have Matlab installed. For more information on Matlab see http://www.mathworks.com.

**Academic integrity:** You are expected to abide by the AI code. The following excerpt from the CS attendum to the AI code contains the most important points:

“Unless otherwise specified by the individual professor, the work you do in Computer Science courses is expected to be the result of your individual effort - the use of a computer in no way modifies the normal standards of the above Code. You may discuss work with other students, and give or receive “consulting” help from other students, but such permissible cooperation should never involve one student having in his or her possession a copy of all or part of another student’s assignment - regardless of whether that copy is on paper, on a computer disk, or in a computer file. This implies that there is no legitimate reason to send a copy of a program from one computer account to another, or to be logged-on to another student’s account.

Discussion of general strategy or algorithms is permissible, but you may not collaborate in the detailed development or actual writing of an assignment. It is also your responsibility to protect your work from unauthorized access. It is inadvisable to discard copies of your programs in public places. This applies to both hand-written and programming assignments.
The penalty for any violation of this Code in Computer Science courses may be failure in the course. This includes collaboration, providing a copy, or accepting a copy of work that is expected to be individual effort.”