ENGRD3220 / CS3220: Introduction to Scientific Computing
Summer 2008
Course Handout / Syllabus

Lectures: MTWRF 1:00-2:15PM Upson 207, TA sessions in Upson 328, June 23rd - August 1st 2008

Instructor: Jonathan Kaldor
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Office Hours: T 2:30-4:00PM, TH 3:30-5:00PM

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Objective: To gain an understanding of both the use of and the concepts behind the tools used in scientific computing and numerical analysis. In particular, by the end of this course you should be comfortable with the following:

- Solving linear systems, interpolating data problems, optimization problems, and ordinary differential equations.
- Applying the solutions to those problems to solve more general problems
- Recognizing special structure within problems and using it to optimize your solution for speed
- Using MATLAB to implement these methods, with clear, concise, vectorized code
- Discussing sources of error and error propagation in your solutions

Grading: 35% Homework, 25% Midterm, 40% Final Exam. Homework is due in class on the specified date (usually Mondays), and late homework will not be accepted. The MATLAB code you write as part of the homeworks will be graded on correctness, efficiency, and style, where efficiency includes both proper vectorization of the code and a reasonable number of floating point operations, and style includes both formatting and judicious use of comments. The midterm will be held in class on July 14th, while the final will be held on Aug 5th at 10:30AM in Upson 207.

Homework/MATLAB Session: TA sessions (typically Fridays, but see schedule) will be held in Upson 328, a CSUGLAB room. In these sessions, questions about the previous homework / current homework will be answered, as well as lectures / in-class work with MATLAB about the previous week’s topics.

**Software:** As part of this course, you will be required to write and run MATLAB code. MATLAB should be available on the CSUGLAB machines, as well as many of the machines available in computer labs in the engineering buildings. If possible, develop and run your code on at least version 7 of MATLAB.

**Academic Integrity:** As with any course at Cornell, you are expected to follow the AI code. In brief, you are allowed to discuss with other students the problems on the homework, as well as general strategies for solution, but you **must not** share writeups or code, in part or in whole. You are also responsible for insuring that your materials are not accessed in an unauthorized fashion, by e.g. not leaving them available on public computers.

You may also consult published outside sources for additional help; this includes books, articles, and websites. However, if you find an idea or guidance in an outside source, you **must** cite it appropriately in your solution.

Violation of the AI code may result in failure for the assignment or the course. If there are any points of confusion, please see [http://cuinfo.cornell.edu/Academic/AIC.html](http://cuinfo.cornell.edu/Academic/AIC.html) or talk to a member of the course staff as soon as possible.